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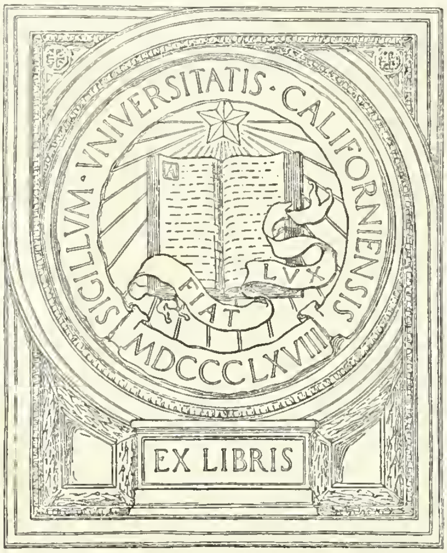
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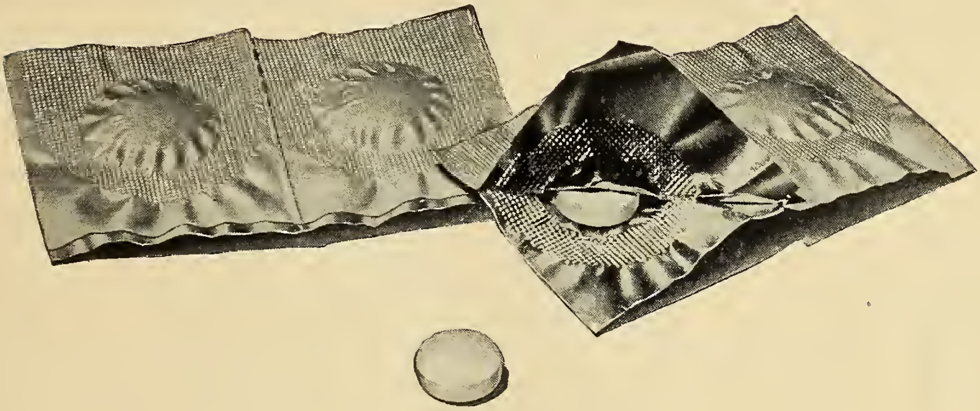

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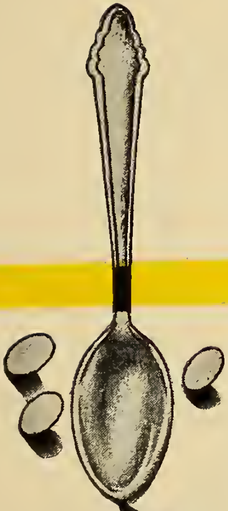

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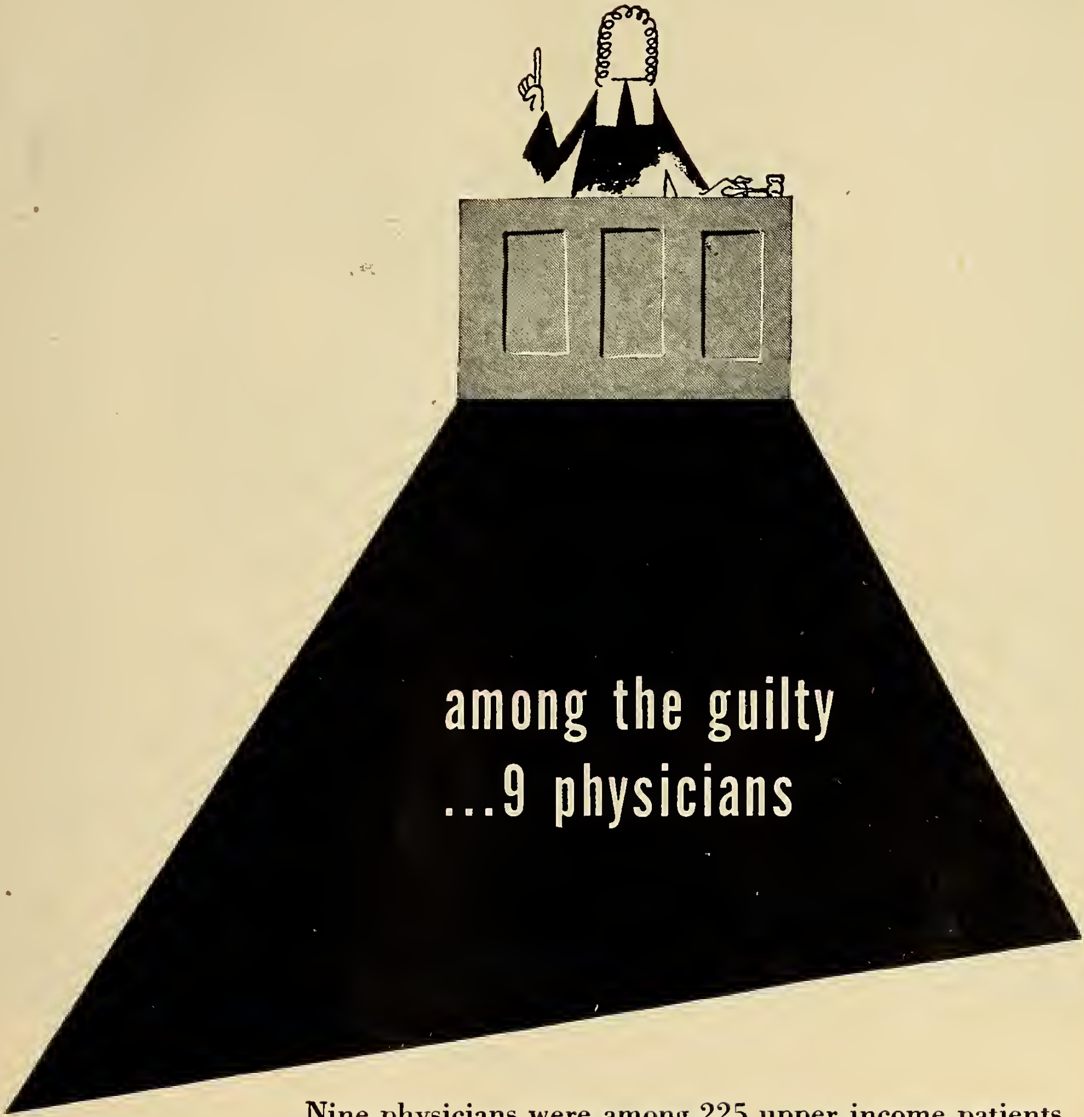

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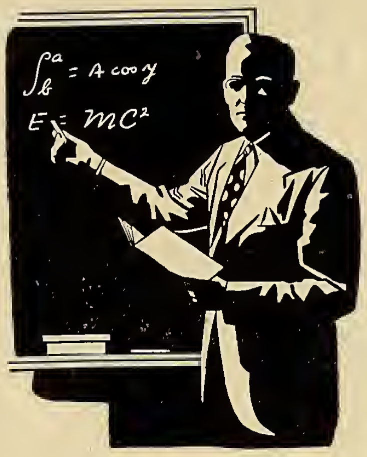

Molder of Minds . . . . .

Dietary Dub!

His diet is balanced, *yet he is a borderline vitamin deficiency case.* Like many others whose occupations are sedentary and who take little exercise otherwise, his caloric requirements and appetite are so small that he simply does not eat *enough* food to supply adequate quantities of the protective factors. As a result his case record has taken its place in his physician's file along with those of all of the other varieties of dietary delinquents: the ignorant and indifferent, patients "too busy" to eat properly, those on self-imposed and badly balanced reducing diets, excessive smokers, alcoholics, and food faddists, to name but a few. First thought in such cases is dietary reform, of course. But this is often more easily advised than accomplished. Because of this, an ever-growing number of physicians prescribe a vitamin supplement in every case of deficiency. If you're one of these physicians—or if you prescribe vitamins only rarely—consider the advantages of specifying an *Abbott* vitamin product: Quality—Certainty of potency—A line which includes a product for almost every vitamin need—And easy availability through pharmacies everywhere. Abbott Laboratories, North Chicago, Ill.

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Available in two strengths—0.05 (*five-hundredths*) mg. (pink) and 0.02 (*two-hundredths*) mg. (buff) tablets. Bottles of 100, 250 and 1,000.

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or land or life, if freedom fail?"

...EMERSON

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Through 1947, which will mark our 48th anniversary (a year for every star in the flag), our conviction that "there is no substitute for America" will remain firm.

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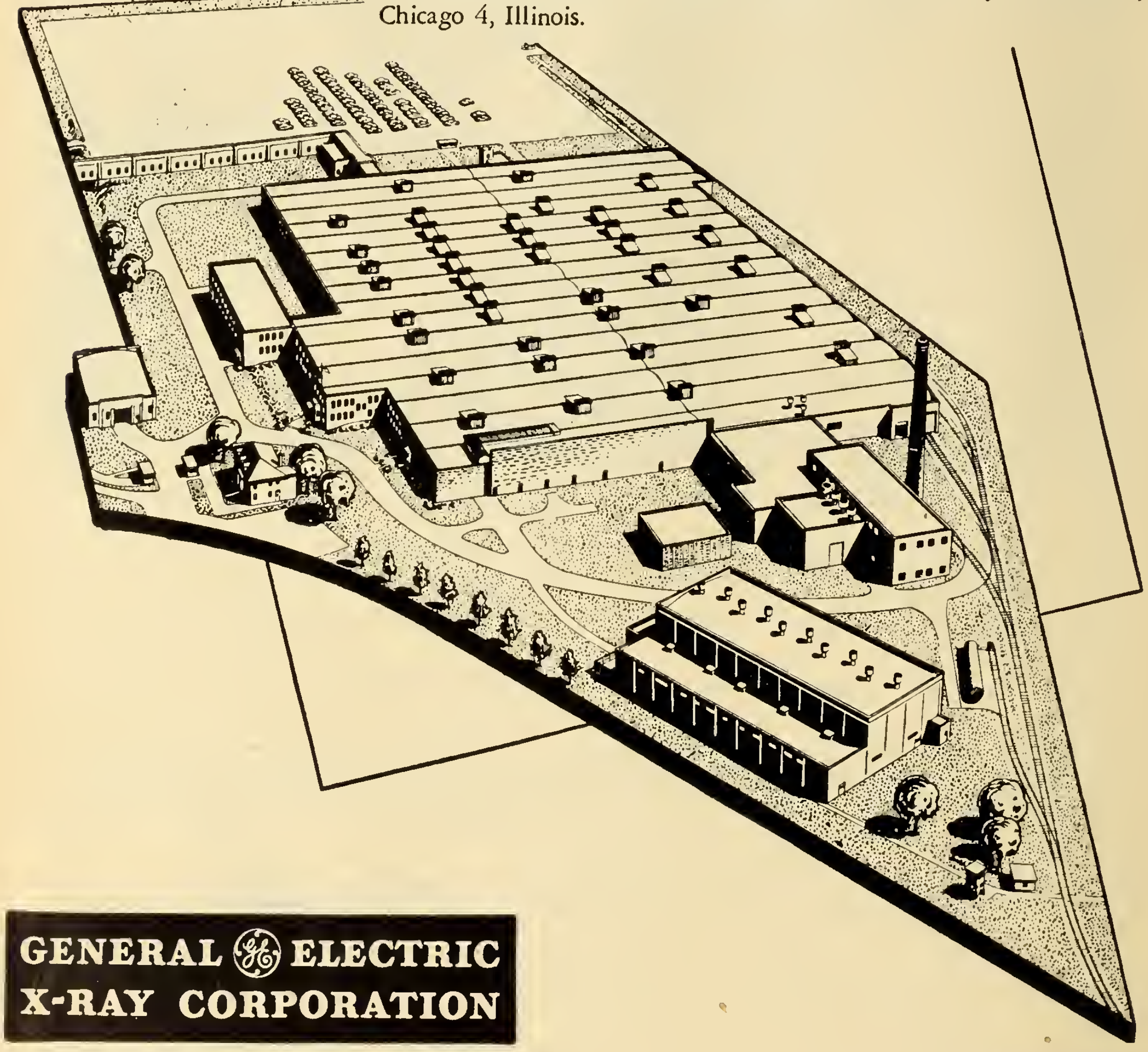
Important to you is the fact that the move from Chicago to Milwaukee will mean no interruption of the production schedules established to meet present delivery promises.

Our Chicago plant will continue to run at full capacity. The Milwaukee plant, already in operation, will gradually assume an increasing share of the manufacturing load.

Here, in this modern manufacturing facility, is concrete evidence of our plans to meet present and future demands of your profession. And your demands will be met without sacrificing the high quality and efficiency that have always characterized the products of this organization. General Electric X-Ray Corporation, 175 West Jackson Blvd., Chicago 4, Illinois.



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He is the doctor out to effect a cure by finding the cause—and combating it.

No place in the world, not even the remotest jungle, is too far, too dangerous, or too difficult for him to penetrate when the needs of medical science say, "This must be done."

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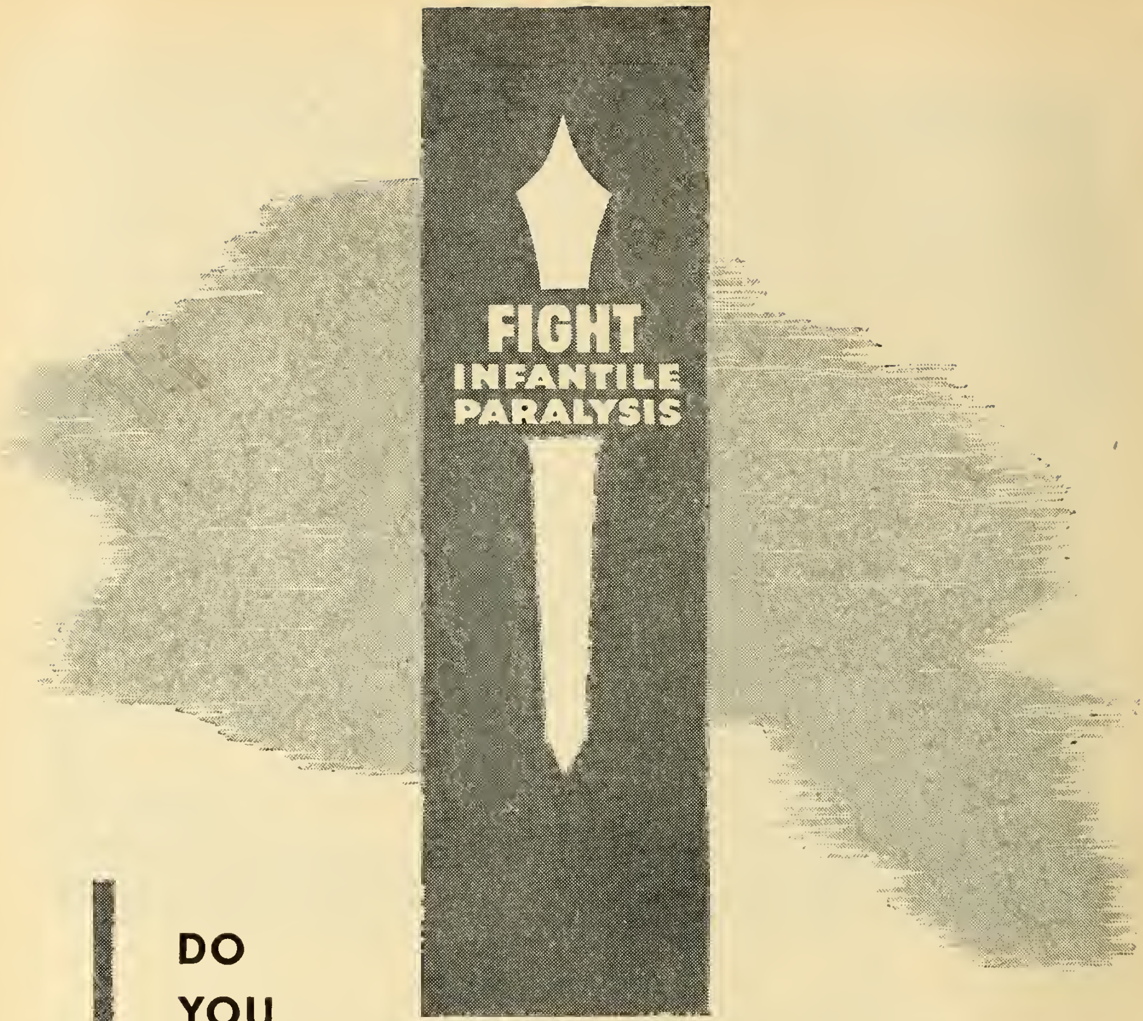

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This is the battle banner of the National Foundation for Infantile Paralysis. The slim, sword-like torch is the stern symbol of a tireless war on a dreaded disease.

The finest of doctors and scientists have given of their time and skill and knowledge to fight poliomyelitis. And annually since its inception in 1938, the National Foundation for Infantile Paralysis has conducted the March of Dimes, in a nation-wide appeal for funds to carry on the work.

The familiar blue and white symbol above your neighborhood drug store tells you that he is a Rexall druggist. More than 10,000 Rexall Drug Stores throughout the nation are proud to join with the American people in support of the 1947 March of Dimes, from January 14 to January 31.

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Why do Tom, Dick and Harry need Vitamin D ?

Growing children require vitamin D mainly to prevent rickets. They also need vitamin D, though to a lesser degree, to insure optimal development of muscles and other soft tissues containing considerable amounts of phosphorus.

Milk is the logical menstruum for administering vitamin D to growing children, as well as to infants, pregnant women and lactating mothers. This suggests the use of Drisdol in Propylene Glycol, which diffuses uniformly in milk, fruit juices and other fluids.

Average daily dose for infants 2 drops, for children and adults 4 to 6 drops, in milk.
Bottles of 5, 10 and 50 cc.

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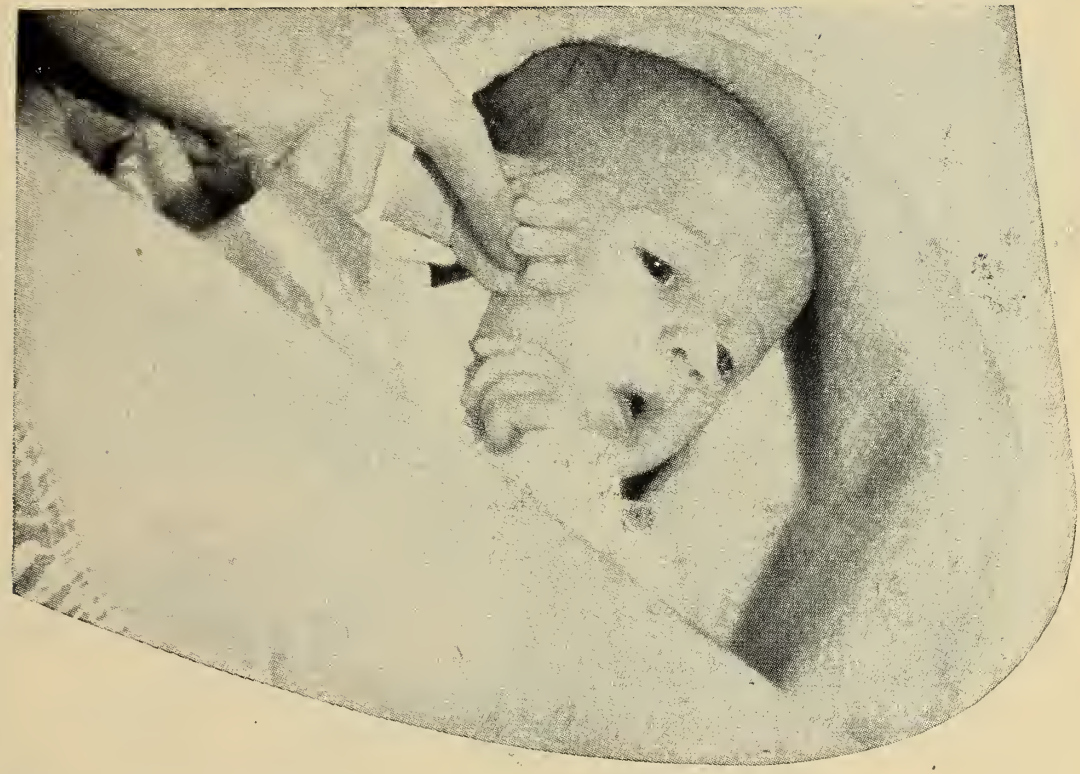

A good grip on life

With infant mortality at its highest during the first month of life, the fewer the burdens on the baby's endurance, the firmer will be his grip on life. And gastro-intestinal upset, colic and diarrhea can be heavy burdens for an infant.

'Dexin' has proved an excellent "first carbohydrate." Because of its high dextrin content, it (1) resists fermentation by the usual intestinal organisms; (2) tends to hold gas formation, distention and diarrhea to a minimum, and (3) promotes the formation of soft, flocculent, easily digested curds.

'Dexin' brand High Dextrin Carbohydrate is simply prepared in hot or cold milk and is readily adaptable to increasing formula needs. 'Dexin' *does* make a difference. 'Dexin' Reg. Trademark

HIGH DEXTRIN CARBOHYDRATE 'Dexin' BRAND

Composition—Dextrins 75% • Maltose 24% • Mineral Ash 0.25% • Moisture 0.75% • Available carbohydrate 99% • 115 calories per ounce • 6 level packed tablespoonfuls equal 1 ounce • Containers of twelve ounces and three pounds • Accepted by the Council on Foods and Nutrition, American Medical Association.

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S-M-A
HUMAN MILK
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S-M-A* *is so like mother's milk it seems to mirror nature*

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Whenever mother's milk is unavailable or of insufficient quantity S-M-A can be relied on to replace it.

S-M-A has the same percentage of protein, fat and carbohydrate as human milk. This similarity of S-M-A to mother's milk is largely responsible for the successful nutritional history of S-M-A babies.

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S-M-A is derived from the milk of tuberculin-tested cows. Part of the butter fat of this milk is replaced with animal and vegetable fats including biologically assayed cod liver oil. Milk sugar, vitamin A and D concentrate, carotene, thiamine hydrochloride, potassium chloride and iron are added.

Supplied: 1 lb. tins with measuring cup.

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SMA

One to One

Mothers simply add 1 measure of S-M-A Powder to 1 ounce of warm (previously boiled) water to make any quantity desired

NO. 7 in Schenley Laboratories' continuing summary of penicillin therapy.

EMPYEMA:
treatment with PENICILLIN SCHENLEY

Penicillin exhibits a marked ability to sterilize pleural effusions whenever the infecting organisms are penicillin-sensitive. It is most effective when administered in large doses during the incipient stages. Patients should be observed carefully for at least two weeks after discontinuance of penicillin therapy to avoid possible recurrence.[1]

In the management of empyema, it is especially appropriate to apply the maxim:

give enough-soon enough-long enough

[1] Poppe, J. K.: J.A.M.A. 129: 435 (Oct. 6) 1945.

PENICILLIN SCHENLEY. Treatment: Penicillin solution is injected directly into the pleural cavity after aspiration and after irrigation with sterile isotonic salt solution, if necessary. Penicillin should not be used for irrigation. The optimum dose for each injection is 50,000 to 200,000 units in a volume of solution less than the amount of fluid or pus aspirated. The frequency of injections depends on the extent, type, and severity of the infection, and the response to therapy. Treatment should be continued until after the fluid becomes sterile.

Surgical intervention is necessary if fibrin masses or loculation prevent adequate aspiration or if penicillin therapy is ineffective, as indicated by persistence of positive cultures after one week.

SYSTEMIC THERAPY. Systemic use of penicillin is indicated as a supplement to intrapleural therapy particularly where there exists an underlying active pulmonary infection or a bronchopleural fistula.

SCHENLEY LABORATORIES SERVICES:

1. Penicillin Paragraphs for January, dealing with empyema, has been mailed to all physicians.
2. A comprehensive penicillin dosage chart will be mailed to physicians on request.

SCHENLEY LABORATORIES, INC.

EXECUTIVE OFFICES: 350 FIFTH AVENUE, NEW YORK CITY

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Announcement

George W. Borg Corporation, manufacturers of postwar X-ray equipment, has appointed the Mithun X-Ray Company, 3601 Glenhurst Avenue, Minneapolis, Minnesota as exclusive distributors of its products in the states of Minnesota, North Dakota and South Dakota.

Mithun X-Ray Company is completely equipped to render technical and electrical service to the profession.

Mr. Mithun has been active in the X-ray equipment field for more than twenty years and is well known to medical men in this area.

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STREPTOMYCIN NOW IS AVAILABLE

Physicians now may obtain adequate supplies of this remarkable new antibacterial agent, without restriction, from their local pharmacists and hospitals.

CLINICAL INDICATIONS

Streptomycin is effective in the treatment of: Urinary Tract Infections, Bacteremia, and Meningitis due to susceptible strains of the following organisms:

Esch. coli

Proteus vulgaris

Klebsiella pneumoniae
(Friedländer's bacillus)

B. lactis aerogenes

Ps. aeruginosa
(*B. pyocyaneus*)

TULAREMIA
All *H. influenzae* infections

Contents equivalent to 63281
1 Gram Streptomycin Base
STREPTOMYCIN MERCK
(Hydrochloride)
LOT NO. 481
Consult accompanying circular.
Streptomycin should be administered under the supervision of a physician.
WARNING—Store below 15° C. (59° F.)
Expiration Date: July 18, 1947
MERCK & CO., INC. • RAHWAY, N.J.
Manufacturing Chemists

Streptomycin is a helpful agent also in the treatment of the following diseases, but its position has not been clearly defined:

Tuberculosis.

Peritonitis due to susceptible organisms.

Pneumonia due to *Klebsiella pneumoniae* (*Friedländer's bacillus*).

Liver abscesses due to streptomycin-sensitive bacilli.

Cholangitis due to susceptible pathogens.

Endocarditis caused by penicillin-resistant, streptomycin-sensitive organisms.

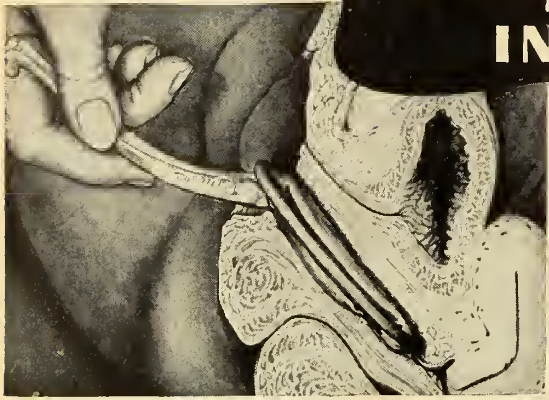
Chronic pulmonary infections predominantly due to streptomycin-sensitive flora.

Empyema due to susceptible organisms.

STREPTOMYCIN
(HYDROCHLORIDE)
Council MERCK *Accepted*

MERCK & CO., Inc. RAHWAY, N. J.
Manufacturing Chemists

Simplicity IN USE



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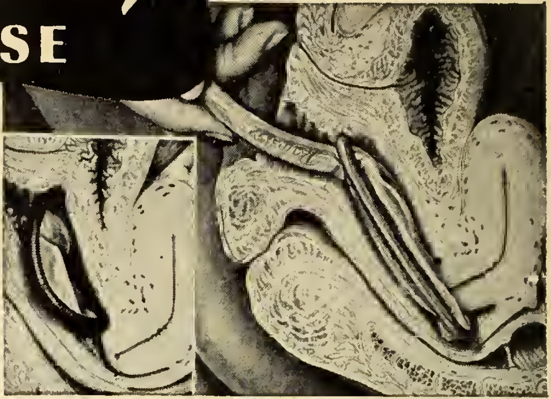

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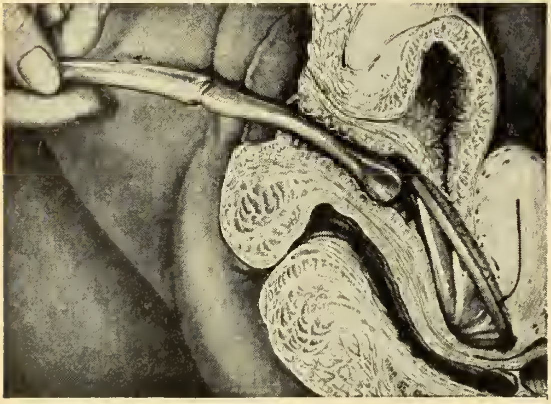
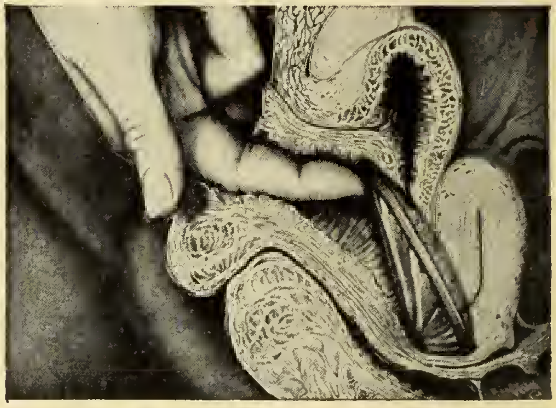


SEATING DIAPHRAGM



These illustrations, showing the simplicity of use of "RAMSES" Gynecological Products, are reproduced from the booklet *Instructions for Patients*. For the physician's convenience, a supply of these booklets is available, upon request, for distribution to patients.

Determination of indications for control of conception, and advice on the proper method of providing protection, are the exclusive province of the physician. "RAMSES"* Gynecological Products are designed for use under the guidance of the physician only.

*The word "RAMSES" is a registered trademark of Julius Schmid, Inc.

Ramses FLEXIBLE CUSHIONED DIAPHRAGM

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A MARK OF Ramses DEPENDABILITY

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423 West 55 Street • New York 19, N. Y.

Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 January, 1947 No. 1

ENDOCRINE THERAPY

EDWARD H. RYNEARSON, M.D.
Rochester, Minnesota

SINCE this paper was presented at the meeting of the Minnesota State Medical Association, there has appeared a booklet *Exhibit on Endocrine Products,* published under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association. It was prepared by Drs. Austin Smith and Walton Van Winkle, Jr., and can be obtained by writing to the office at 535 North Dearborn Street, Chicago, Illinois. It supplies in one small booklet a much larger amount of information than was contained in my original remarks or will be written here.

What are some of the products of the endocrine glands which we physicians have found useful?

Thyroid

Desiccated thyroid is the most widely used (and misused) of all the hormones. It has several advantages: it is inexpensive, it is effective by mouth, and when properly used it is not toxic. It is so satisfactory that I know of no reason for the routine use of thyroxin, which is expensive and which belongs in the research laboratory. The most common use for thyroid is to elevate the basal metabolic rate. In cases of myxedema it constitutes complete replacement therapy. I have rarely seen a patient with myxedema who received more than 2 grains (0.13 gm.) daily as a maintenance dose, and in most instances there is a difference in response to variation of as little as ¼ grain (0.016 gm.). A patient may feel "low" with 1 grain (0.065 gm.), "too nervous" with 1½ grains (0.1 gm.), "just right" with 1¼ grains (0.08 gm.). This is quite a contrast to the patient who has a low basal metabolic rate without myxedema and who can take 3, 4 or 5 grains (0.2, 0.26 or 0.3 gm.) a day without any untoward symptoms. Having taken such an amount for some weeks, her basal metabolic rate is found to have risen dramatically from —18 per cent to —17 per cent! In these cases, the low rate is part of the general picture rather than the cause of the trouble, and justification for the use of thyroid depends on the patient's response rather than any changes in the basal metabolic rate. The use of thyroid in certain cases of menstrual disorders, sterility, and so forth, is also often empiric. Almost every obese patient receives thyroid at one time or another; very rarely is it of any help (unless "accompanied by a diet"). It is unfortunate that some obese patients are given prescriptions for excessive amounts of thyroid; one such patient was taking 32 grains (2.1 gm.) a day. She was reducing all right, and so were her chances for life. Thyroid is also very generously prescribed for "glandular imbalance," Mongolian idiocy, too much or too little hair, too thick or too thin fingernails and a host of other poorly defined conditions.

Parathyroid Hormone

I have never prescribed a single injection of parathyroid hormone for the treatment of acute or chronic parathyroid insufficiency. It is a very valuable hormone for research studies, but patients can be treated easily and inexpensively by

---

From the Division of Medicine, Mayo Clinic, Rochester, Minn. Read at the annual meeting of the Minnesota State Medical Association, Saint Paul, Minnesota, May 22, 1946.

the administration of calcium by mouth with vitamin D for absorption. The calcium, whether as lactate or as gluconate, should be dissolved in very hot water; unless a clear solution is administered it is very poorly absorbed. I am not prepared to say that there is no absorption from all the calcium powders and tablets which are administered, but I can say that I have never seen these help any patient who had true hypoparathyroidism. The amount of calcium required to control a patient's symptoms and elevate the serum calcium to normal varies in each case. Some patients require only 2 or 3 teaspoonfuls (8 or 12 gms.) of the powder daily; others, in cases of acute insufficiency, may require 16 or 20 teaspoonfuls (64 or 80 gms.). Vitamin D may be given as cod liver oil or one of the many preparations in concentrated forms. Calciferol and dihydrotachysterol (A.T. 10) are often of great value. One cubic centimeter of A.T. 10 taken daily by mouth every day or every other day will control the hypoparathyroidism of many patients. Parathyroid hormone can be used for such patients, but in addition to the expense there is always the risk of overtreatment, which produces the clinical picture of hyperparathyroidism.

Adrenal Cortex

Adrenal cortical extract is prepared by several firms. Its primary use is in the treatment of Addison's disease. The only synthetic fraction available for use is desoxycorticosterone acetate. Neither one satisfies most physicians. The extract is often too weak, and if sufficient amounts are given the cost is often prohibitive. The synthetic fraction is often unsatisfactory because its effect is incomplete, causing only a retention of salt and water. What we physicians hope for is either a more potent, less expensive, whole adrenal cortical extract or other synthetic fractions which will help with the other deficiencies present in Addison's disease, such as hypoglycemia. The synthetic fraction is usually prepared in oil and administered hypodermically. It can also be implanted as pellets. Preparations for oral or sublingual use are more wasteful than preparations for parenteral use. Some oral preparations, such as cortalex tablets, are too weak to be of any value in the treatment of Addison's disease; they are usually prescribed for "hypo-adrenia," whatever that might be.

Adrenal Medulla

Physicians are well acquainted with the indications and uses of epinephrine. Its vasoconstrictive effect has made it valuable in certain cardiovascular conditions, in asthma, in shock, and so forth.

Pancreas

Space does not permit a discussion of the various types of insulin and their use.

Estrogenic Substances

In the booklet mentioned at the beginning of this article, more than two pages are required simply for the listing of the commercial forms of estrogens. The booklet lists both the naturally occurring estrogens and all the varied synthetic fractions. It states:

> Estrogens may be administered by injection, by inunction with a suitable base, or by mouth. Estrone and estradiol lose considerable activity when taken orally. When estrone is administered in the form of its sulfate, it appears to retain a greater amount of its potency. Several estrogenic compounds have been prepared which lose relatively little potency when administered orally.
>
> Besides crystalline estrogens, preparations of highly purified but noncrystalline estrogens are available. These are usually extracted from the urine of pregnant women or pregnant mares; the estrogenic activity of such extracts is due almost entirely to estrone. The Council has coined the term Solution of Estrogens for such preparations.

There has been an enormous amount of clinical research with estrogenic substances. Claims for therapeutic results have been often exaggerated and confusing. Definite and consistently reliable results have been obtained in only a relatively small number of conditions. These include treatment of the symptoms of the menopause syndrome, natural or artificial, senile vaginitis, kraurosis vulvae, pruritus vulvae, gonorrheal vaginitis of children, hypogenitalism in the female, relief of engorgement of the breasts, interruption of excessive flowing in "functional bleeding," palliation of local discomforts from prostatic carcinoma and its metastases. All other indications should be considered unscientific or in the experimental stage of therapy.

Estrogens are carcinogenic when administered experimentally to animals which have an inherited sensitivity to the development of mammary carcinoma. Many clinicians believe that estrogens are therefore contraindicated in the treatment of women who have a familial or personal history of mammary or genital malignancy.

Progestins

The hormone of the corpus luteum is most important in normal female physiologic processes. It is essential for the inception of pregnancy and for its successful completion. My experience in female endocrinology is limited, and again I refer to this booklet:

> Commercial preparations of progesterone are either extracts of animal ovaries, or the pure compound prepared synthetically. At one time, there was considerable enthusiasm over the therapeutic use of such preparations in dysmenorrhea, menorrhagia and habitual abortion, but the volume of satisfactory evidence is too small to warrant dependence on progesterone for treatment of these conditions.

Androgens

Castration in the male produces the clinical picture recognized since the days of antiquity. For all these years, physicians have attempted to treat male gonadal deficiency in a variety of ways, including the widely publicized transplantation of "goat glands." In more recent years there have been available testosterone propionate (in oil, ointment or pellets) and methyl testosterone for oral or sublingual use or for administration in an ointment. These substances constitute adequate replacement therapy for those patients whose symptoms are caused by a lack of this hormone. Androgens also have other effects, such as a marked nitrogen-sparing effect, and encouraging reports have been published of their use in cases of inoperable carcinoma of the breast. There are conflicting opinions regarding their use in cases of gynecologic disorders and angina pectoris.

Without any facts to support the statement, I feel safe in saying that the largest amount of androgens is prescribed for nonspecific conditions. I refer particularly to such conditions as impotence and "male climacteric." Undoubtedly there are cases in which both conditions are real and respond to treatment. Again without facts to support me, I state my conviction that most men who are impotent are suffering from a psychic disturbance and that most men diagnosed as having "the male climacteric" are simply exhausted, frustrated, middle-aged men. Many of these men are helped by androgens, but in my opinion this is psychosomatic medicine in most instances. When controls were run, as they were at the University of Minnesota and at Johns Hopkins Hospital, for example, the men could not tell when they were getting the hormone and when they were receiving a placebo.

Anterior Pituitary

The anterior lobe of the pituitary is a most important gland. We are all familiar with pituitary dwarfism and the deficiency secondary to a chromophobe adenoma. We are equally familiar with the syndromes produced by overfunction, such as gigantism, acromegaly and Cushing's disease. We are all thrilled with the dramatic reports published by our friends in the laboratory wherein they recount their ability to isolate separate hormones or fractions which when injected into animals cause such startling changes.

But we are equally aware of our disappointment when we attempt to use commercially prepared anterior pituitary extracts in the treatment of patients. To my knowledge there has not been a single instance in which any patient suffering from postoperative pituitary insufficiency has been helped in any way by the injection of any anterior pituitary extract. This statement is almost equally applicable to the use of growth hormone in the treatment of dwarfism. Prolactin has been advised for the treatment of severe menstrual bleeding, but in general it may be said that the results of the injection of anterior pituitary hormones have been very disappointing. There is, of course, no evidence that any oral preparation is worth anything.

Posterior Pituitary

Surgeons and obstetricians have found important uses for pitressin and pitocin. We physicians are interested in the use of pitressin in the treatment of diabetes insipidus. It can be administered hypodermically in an aqueous solution or, for a prolonged effect, as pitressin tannate in oil. It can be administered in a jelly or on pledgets in the nose. The easiest, cheapest and usually most satisfactory method is to prescribe the posterior pituitary powder, which the patient introduces into the nose. The least wasteful method is to blow a small amount into the nose with an atomizer bulb and glass tube. Ordinarily a small amount of powder (easily measured on the tip of a small blade) insufflated in the morning and at night will control the symptoms.

Gonadotropic Substances

These are obtained (1) directly from the anterior pituitary gland, (2) from the serum of pregnant mares and (3) from the urine or placenta of pregnant women. They differ somewhat physiologically. For example, chorionic gonadotropin (2 and 3 in the preceding list) does not markedly stimulate the ovaries of monkeys or human beings. It may cause degenerative changes.

Chorionic gonadotropin has had wide use in the treatment of gynecologic disorders related to a real or supposed ovarian disturbance, particularly various abnormalities of menstruation, and in an attempt to overcome female infertility. It has been used alone and in various combinations with other hormones, particularly with the estrogens and progestins, in an effort to simulate the normal cyclic hormonal effects.

In both male and female patients chorionic gonadotropin has been used to stimulate gonadal development and often to produce generalized growth. Its primary use in male patients has been in the treatment of cryptorchidism. Astounding successes were listed in early reports but it became obvious that many of these patients did not have true cryptorchidism; with patience and warmth the testes would descend. There is now general agreement that this treatment will affect the descent of the testes of those boys whose testes will descend spontaneously when the delayed maturity is complete. There is no objection to hastening maturity and descent; many observers feel that there are good reasons for hastening them. These same observers feel that if descent does not occur after six to eight weeks of treatment, surgical intervention should follow, since the tissues are at that time most susceptible of repair. Other competent observers, however, are of the opinion that most of these testes will descend of their own accord and that the delayed descent is a manifestation only of delayed puberty. They recommend simply observation and patience. If testes do not descend when puberty is complete, then surgeons are fairly well in agreement that an effort should be made to bring the testes down surgically if both are undescended and that if one is undescended, it should either be brought down or removed. This conviction is based on the fact that testes cannot function normally unless they are in the scrotum and there is a higher incidence of carcinoma in intra-abdominal than in intrascrotal testes, although the incidence of carcinoma in either is rare.

Conclusions

Endocrinology continues to be a most fascinating study. Its reputation is enhanced by the brilliant advances from the laboratory and their careful application in the treatment of patients. Those who indiscriminately inject hormones into patients who have poorly defined conditions, and then report good results with never a control, are hurting rather than helping endocrinology. Physicians who regard these enthusiastic, unscientific papers with skepticism and criticism are labeled "nihilists." They would prefer to be called "realists," for they make an effort to determine what is real and to suspect that "10,000 patients suffering from crud; report of 100 per cent cures" may not represent a very scientific study.

FELLOWSHIPS FOR PHYSICIANS AND ENGINEERS

Announcement is made by Surgeon General Thomas Parran of the U. S. Public Health Service that applications for Fellowships in postgraduate public health training for physicians and engineers for the school year beginning in the fall of 1947 will be received at any time prior to May 1, 1947.

The Fellowships are made possible by a grant of $228,400 from the National Foundation for Infantile Paralysis through funds contributed to its March of Dimes. Fifty-three students were awarded Fellowships for the school year beginning in September, 1946.

The Fellowships provide an academic year's graduate training of approximately nine months in an accredited school of public health or an acceptable school of sanitary engineering followed by three months of field training, and are open to men and women, citizens of the United States, under forty-five years of age. Physician applicants must have completed at least a year's internship.

The specific purpose of the Fellowships is to aid in the recruitment of trained health officers, directors of special services, and engineers to help fill hundreds of vacancies existing in State and local health departments throughout the country. The Fellowships are intended for newcomers to the public health field, and are not open to employees of State and local health departments, for whom Federal grant-in-aid funds are already available to the States.

Applicants for Fellowships may secure further details by writing to the Surgeon General, U. S. Public Health Service, 19th and Constitution Avenue, N. W., Washington 25, D. C., Attention Public Health Training.

COUNTRY MEDICINE—PAST, PRESENT AND FUTURE

GEORGE E SHERWOOD, M.D.
Kimball, Minnesota

IT has been customary for the presiding officer of the Northern Minnesota Medical Association to contribute to the annual program by giving a presidential address. I wish to state at this time that I feel wholly inadequate for the occasion, as both my literary and oratorical ability are very limited. In fact, I feel a good deal like the man who, being of some prominence in his locality, had spent his summer vacation in making an extended European tour, and upon his return, as he left the palatial liner at New York, was approached by a representative of the *Atlantic Monthly* and asked if he would not contribute something to the next issue of that noted magazine. His answer was very brief and much to the point. He said that it would be impossible, as he had suffered from *mal de mer* ever since he boarded the ship and had been forced to contribute to the Atlantic daily.

It was some poet or philosopher, I believe, who said that brevity is the soul of wit. So I will take his advice, undoubtedly much to your gratification, and my part of the program will be very brief. We have such an unusual array of talent at the toastmaster's table that any remarks that I could make would be more or less superfluous and would add little to the eloquence of the occasion.

First, I wish to thank the members of this society for the honor of presiding over this organization for the past year. It has been my pleasure to have been affiliated with the Northern Minnesota Medical Association for a number of years and to have become quite well acquainted with a goodly share of its members. I assure you that its membership as a whole is composed of a high type of medical men, both as to character and professional attainments.

A few months ago there was held in Saint Paul the ninety-third annual meeting of the Minnesota State Medical Association. As the years have rolled by, the membership of that fine organization has become so large that it is almost unwieldy, and it has been found necessary to divide the meeting into different sections that meet simultaneously. Therefore, it is almost impossible for any ordinary member of the medical profession to contact and become acquainted with more than a small portion of its membership. Hence such sectional organizations as the Northern Minnesota Medical Association have a proper place in the economy of organized medicine. Having a much smaller membership and attendance at its meetings, it affords a better opportunity for its members to become acquainted with each other, and it should receive the encouragement and support of all medical men residing within its territory. This is especially true at this time, when the bureaucrats are doing their utmost to destroy the private practice of medicine and to regiment the medical profession under the guise of socialized medicine. If we do not stand together and put up a united front in opposition, they will very likely succeed.

It is now more than fifty years since your speaker located in a country town to practice his profession. Since that time there have been great changes in the conduct and administration of a country practice, as well as in the general practice of medicine and surgery, so that a physician who locates in the country today has little conception of the hardships and trials of a country doctor of half a century ago. Just as the airplane has destroyed the isolation of the world at large, so have the automobile, good roads, rural telephones and radio destroyed the isolation of country life. At the beginning of this century the roads as a rule were simply trails through the forests and over the prairies and for transportation we had to depend on horse-drawn vehicles. Hospitals were few and far between; consultation was difficult to procure, and laboratory diagnosis was hard to obtain, so that the country doctor of those days had of necessity to be more resourceful and self-sufficient and had to depend on his own observations and experience in the treatment of his patients. I can assure you from actual experience that it was far from romantic to be called out on a winter's night, during a raging snow storm in subzero weather, over roads covered with drifting snow, to minister to the ills of a rural patient often many miles away. Compared to that, the country doctor of today has a a very easy task.

President's Address before the Northern Minnesota Medical Association, Crookston, Minnesota, August 24, 1946.

When he receives a country call, he can step into his high-powered automobile and with very little discomfort speed over highways cleared of snow in the winter time to his patient's bedside, and make the round trip in one quarter of the time and with none of the hazards and discomforts required during the horse and buggy days. Or he can drive to a well-equipped modern hospital not many miles away, and arrive there as rapidly as some of the city surgeons, whose homes are in the fashionable suburbs, can reach the hospital with which they are affiliated.

Not only have there been great changes in the administration of a country practice since the dawn of the century, but there have also been great changes in the character of the human afflictions that the country physicians are called to treat. Some of the diseases that were common at that time are now very rare. Epidemics of small pox, diphtheria and typhoid fever were usually an annual event, and often took a great toll of humanity. Pulmonary tuberculosis was not considered contagious at that time, but was thought to be hereditary; and due to the poor housing conditions under which the early settlers had to live, frequently decimated entire families. Tuberculous disease of the bones and lymphatic glands, due to the bovine germ and transmitted to humans through infected milk, was very prevalent. Now, through the pasteurization of milk and the tuberculin testing of cattle that type of tuberculosis has been almost entirely obliterated. Thus through the progress of medical science and the discovery and use of vaccines and antitoxins to prevent and treat disease, many of the maladies of former days are almost non-existent.

In spite of the elimination of the hazard, hardships and inconveniences of country practice, the average graduate in medicine today does not choose to locate in the country, but usually prefers to establish himself in the larger and more populous centers where the profession is often overcrowded but hospital and facilities are near at hand. This migration to the cities has resulted in a real scarcity of physicians in the villages and rural communities. In fact, there are counties in some states without a single resident physician. Dr. Simons, our esteemed president of the Minnesota State Medical Association, in a recent issue of Minnesota Medicine, covered this situation very ably and very thoroughly. He stated that the lack of proper medical care in some parts of the country is not due to an actual shortage of physicians but to a lack of proper distribution of physicians.

This tendency of medical graduates to establish themselves in the larger centers is not only evident in our country but in other lands as well. In our neighboring country south of the border this tendency has been evident for a number of years—so much so, in fact, that Mexico City with its population of about two million has a large oversupply of physicians, while many parts of the republic lack adequate medical care. The government of Mexico has recognized this deplorable condition and has attempted to ameliorate it by appropriate legislation. Every graduate of a medical school in Mexico is now required to locate for six months to a year in a locality needing a physician before he receives his diploma, and during this period of probationary practice, the government assists him financially.

Another reason advanced by some as a factor in the cause of this mal-distribution of physicians in the country is the great increase of specialization. It is claimed that a number of medical colleges are devoting so much time to turning out specialists that the education of general practitioners is neglected. Years ago, when a doctor wished to become a specialist in medicine or surgery, he was advised to engage first in general practice for a few years so he could ascertain what line of practice he preferred and was best fitted for. Then, through personal experience he could better appreciate the problems and difficulties of a general practitioner.

In conclusion, I wish to say that the inadequate distribution of medical care in this country of ours is one of the chief arguments advanced by advocates of state medicine. It, therefore, behooves organized medicine to use its very best efforts to meet this problem and to see that this mal-distribution of doctors is corrected, so that all parts of our country are provided with proper medical care. In that way the time-honored relation between the doctor and his patient will be preserved, and the country doctor will not become a relic of the past and a forgotten man.

NEWER METHODS IN THE TREATMENT OF HYPERTHYROIDISM

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WHILE thyroidectomy has long been considered a satisfactory method of treating adenomatous goiter, the surgical removal of the hyperplastic type has not afforded equally good results. Those interested in the study of goiter have long sought other means of overcoming hyperthyroidism in exophthalmic goiter. In the early part of this century, various solutions including weak phenol and boiling water were injected into the goiter in an attempt to destroy it; quinine, urea, and x-ray therapy had their day; and then in 1922 when Plummer proposed the pre-operative use of Lugol's solution, some advocated iodine as a curative measure, and unfortunately a few still continue to do so. Then George Crile suggested denervation of the adrenal glands, and others irradiation of the pituitary. In time all these methods were discarded, and thyroidectomy again returned to favor.

Still, thyroidectomy, even when performed by the most experienced thyroid surgeons, occasionally proves to be disappointing. Probably the incidence of recurrence for all surgeons performing thyroidectomy has been at least 10 per cent. In some patients two or even three recurrences have developed. I performed a thyroidectomy upon one patient with exophalmic goiter upon whom three subtotal resections of the gland had been performed previously by skillful surgeons.

As a consequence, because of these occasionally unsatisfactory results and because recurrences sometimes develop after many years of good health, the discovery of a real antithyroid drug was eagerly anticipated. Such a discovery seemed apparent when Astwood and others demonstrated in 1943 the effectiveness of thiouracil in treating hyperthyroidism.

Three years have now elapsed since Astwood's report, and thiouracil has been tried in many thousands of cases. At first the drug was released only to institutions prepared to conduct careful clinical research studies on its effect in hyperthyroidism. Despite these careful investigations, thirty or more deaths as a result of agranulocytosis are known to have occurred. Since the drug has been generally released, a certain number of unpublished deaths have undoubtedly occurred from its use. One of the most recent about which I have learned was a patient with neurocirculatory asthenia that had been incorrectly diagnosed as hyperplastic goiter.

Despite its unfortunate toxic effects, thiouracil has proved a valuable adjunct to surgery in the treatment of certain types of toxic goiter. Three years' experience in a series of fifty cases has led me to the following conclusions regarding the advantages and dangers of this antithyroid agent.

There are advantages in its use in the following types of cases:

1. In advanced multiple toxic adenoma in which there is no response to iodine.
2. In toxic adenoma complicated by such conditions as myocarditis, fibrillation, hypertension, diabetes, and decompensation.
3. In severe exophthalmic goiter, in the very young and in the aged and in the debilitated and decompensated.
4. In exophthalmic goiter in which because of pregnancy, previous nerve injury, infections, or other diseases it may be desirable to delay operation and yet not continue on iodine.
5. In "iodine-fast" exophthalmic goiter.
6. In recurrent or persistent hyperthyroidism.

Thiouracil has supplemented but not supplanted thyroidectomy in the treatment of toxic goiter. Because it in no way tends to reduce or eradicate the nodular adenomatous goiter, it cannot replace operation. The toxicity may be reduced and even controlled, but the goiter may still continue to grow and cause pressure symptoms or even become malignant. The fact that I have seen five adenomatous goiters in recent months that have undergone malignant changes has made me more cognizant than ever of this possibility. The experience of numerous other surgeons interested in this field indicates that malignancy of the thyroid is apparently on the increase.

The experience of a large number of investigators has been that, sooner or later, most of the patients with exophthalmic goiter who have been on treatment with thiouracil tend to have recur-

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From the Frieda Meyers Nishan Foundation for the Study of Goiter of the Jackson Clinic, Madison, Wis.

Read before the meeting of the Interurban Society of Duluth and Superior at Superior, Sept. 19, 1946.

rences. My own experience is negligible since I have preferred to use the drug largely as a preoperative measure in certain selected cases. Because of the danger of the development of agranulocytosis, because of the necessity of having patients travel a considerable distance at weekly intervals to have a check of the white blood count, and because of the comparatively long period of treatment and observation required, thyroidectomy has remained the treatment of choice for most patients. One patient with a mild case of exophthalmic goiter is now well eight months after the drug was stopped. Three patients suffering from a recurrence likewise appear cured after a similar interval. Ten suffered a relapse after the drug was stopped.

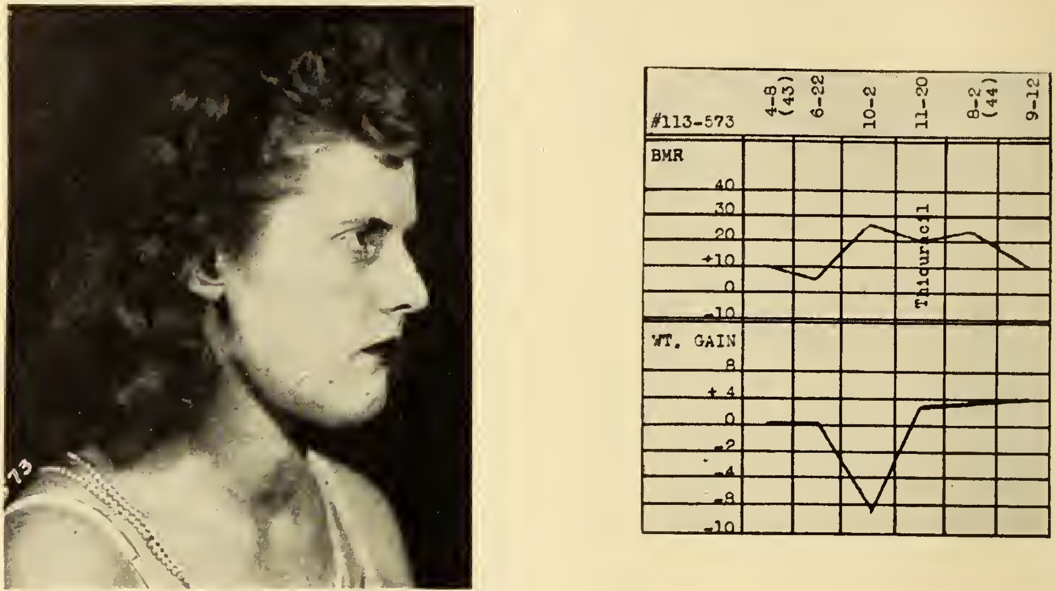

Fig. 1. Recurrent exophthalmic goiter with nerve paralysis controlled and apparently cured by thiouracil.

In such types of cases as have been previously mentioned, thiouracil has proved a most useful agent, and in my own experience it has occasioned no serious consequences. However, two mild skin reactions and one gastro-intestinal upset have occurred. Few reactions to the drug have occurred, I believe, because all patients have been schooled to watch for toxic manifestations and have been observed at short intervals and especially because the drug has not been used in large doses. Patients are usually started on a dose of 0.1 gm. three times a day, and this amount is seldom doubled. As soon as indicated by the metabolic rate and clinical study, the dosage is reduced to a maintenance amount of 0.2 gm. daily.

Five months ago I discontinued the use of thiouracil and began substituting a less toxic antithyroid agent, propylthiouracil. There is every indication that this new preparation will prove equally as effective as thiouracil in the treatment of hyperthyroidism and will be devoid of its danger. All patients who were receiving thiouracil have now been changed over to this drug, and their clinical status and metabolic rates remain equally satisfactory. On the other hand, there is little indication that propylthiouracil will prove of any greater curative value. For example, two children, aged nine and thirteen, both of whom have exophthalmic goiter, have been receiving these drugs for a year and both continue to show signs of hyperthyroidism, although the disease is held in check.

Propylthiouracil is still on a research basis, but there is every indication that it will shortly be released and will largely supplant thiouracil. It is my belief that thiouracil should never have been released for general distribution, and I believe it should now be withdrawn in favor of its less dangerous successor. However, the same precautions must be observed in using propylthiouracil, and frequent observation and checking of the leukocyte count should be continued until greater data is accumulated. It is dispensed in 25 mg. tablets, and the average dose is one before meals and one at bedtime. Some investigators have been using up to 150 mg. or more a day with no unfavorable reactions. One case of clinical agranulocytosis without serious consequences has been recorded. This report was by Dr. Bartels of the Lahey Clinic and was presented at the June meeting of the American Association for the Study of Goiter. This discussion concerned a study of 165 cases of hyperthyroidism treated by propylthiouracil. A study of eighty cases was reported by the Cleveland Clinic. The results achieved at these institutions and at the Jackson Clinic indicate that propylthiouracil will prove more effective than Lugol's solution in the preoperative preparation of patients having toxic adenomatous goiter. As with thiouracil, the poor risk patient may be so improved that a one-stage thyroidectomy may be performed with little danger. There is no indication as yet that this drug will do other than this in exophthalmic goiter. It may effect a cure without surgery in mild and incipient cases and possibly in a small percentage of the remainder.

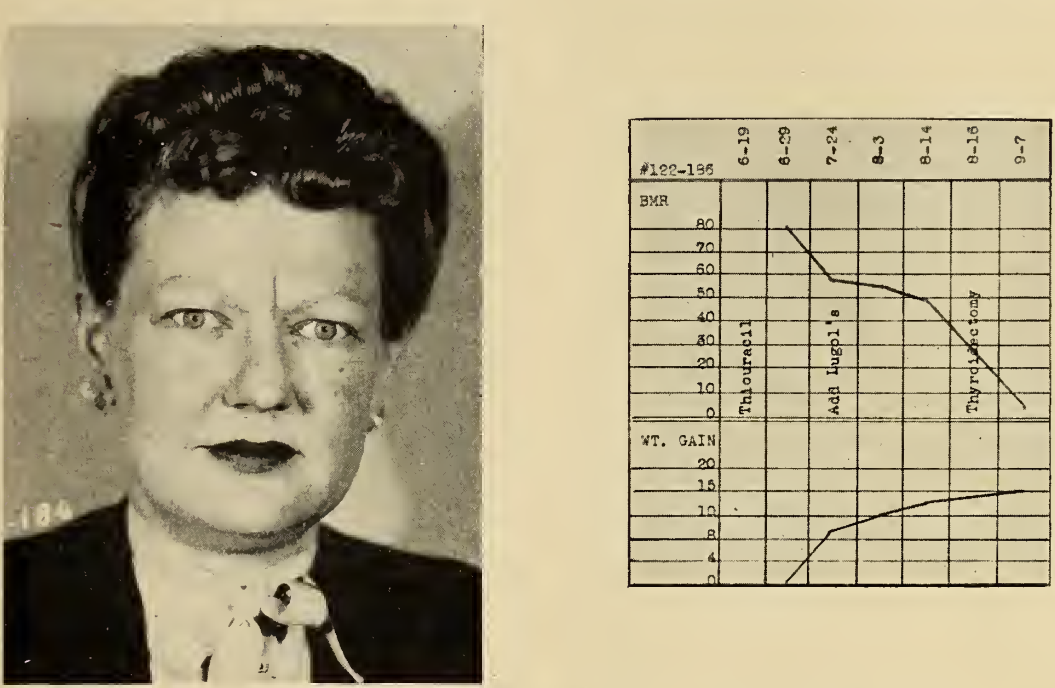

Fig. 2. A severe case of "iodine-fast" goiter responding well to thiouracil.

Preliminary reports by Drs. Hertz and Chapman of Boston on the use of radioactive iodine are interesting but inconclusive. In a small series of twenty-five cases of hyperthyroidism, satisfactory results were obtained in twenty, and in the remainder it was necessary to perform thyroidectomy to effect a cure. Reports by these brilliant young investigators presented at the Chicago meeting of the goiter society aroused the keen interest of all the members. The possible effect of radioactive iodine on carcinoma of the thyroid was discussed, but little was brought out to justify the exaggerated reports that have appeared in the press and which did not receive the approval of the investigators.

At the meeting of the goiter society, my brain became somewhat confused after two days of atomic bombing with isotopes, radioactive iodine and other new ideas in relation to goiter, but I finally gathered courage to present a nearly forgotten subject, the treatment of hyperthyroidism by thyroidectomy. A study of 100 cases of exophthalmic goiter operated upon twenty or more years ago was presented, and slides of several of these patients as they appeared in the early twenties and as they appear today were shown. Only one of these patients is suffering from the disease today, and in this case the symptoms are mild and under control. Ten of the patients are now over seventy-five years of age and are still in good health.

Newer methods in the treatment of hyperthyroidism are proving a valuable adjunct to the surgeon in treating hyperthyroidism, but as yet noth-

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INTERNAL DERANGEMENT OF THE KNEE

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THE TERM "internal derangement" has been employed since Heys first introduced it in 1784 to include a large group of intra-articular conditions of joints. Infections of joints and different types of arthritis *per se* are excluded from the group but most other lesions of the knee joint are included. The athlete who has a "trick knee" and the patient who says, "Doctor, my knee goes out of joint," are suffering from internal derangement of the knee. The patient usually contributes information which reveals that rather sudden mechanical locking, slipping or giving way of the joint occurred and that the subsequent reaction of the synovium was characterized by swelling. After a period, the condition usually becomes asymptomatic only to recur after subsequent trauma. A high percentage of patients who have internal derangement of the knee are young men because they are more likely to be subjected to trauma than are others.

Approximately twenty-five separate conditions may cause mechanical derangement of the knee. The two most common are tears in the semilunar cartilage and loose bodies in the knee. According to figures recently compiled by Henderson and Lipscomb,[3] 1,079 arthrotomies were performed in 1,031 cases at the Mayo Clinic before 1944, for treatment of conditions arising from tears in the semilunar cartilage or from loose bodies. Six hundred fifty-nine tears were found, and in 420 cases derangement was due to the presence of a loose body. The correct diagnosis was made pre-operatively in 79 per cent of the cases. In this unselected group, patients of all ages were included.

The diagnosis of internal derangement depends on the history, physical examination with special attention to the knee, roentgenographic examination and, in some cases, surgical exploration. Most important among these is the history. From the history it can be decided whether conservative or surgical treatment should be instituted. In taking the history, attention should be given to the type of attack—whether true locking has occurred, or whether simply a little catch or a giving way is responsible—to the number of attacks and to whether these attacks are getting more or less frequent. The triad of symptoms usually associated with internal derangement is pain, catching or locking, and swelling. According to Henderson and Lipscomb's statistics, 70 per cent of all of these patients had this triad. However, one or more of the symptoms may be lacking and it is important that the patient not be dismissed simply because locking has not occurred. In cases of tears in the posterior part of the cartilage or disruption of a ligament locking does not, as a rule, occur.

For examination after the general evaluation, the patient's lower extremities should be unclothed. The patient should first be asked to walk, so the presence or absence of swelling, of atrophy of the quadriceps femoris and of limping, and the range of motion, can be observed. The patient sits down for the rest of the examination. It is easier for me if I sit at a right angle to the patient. The patient is asked to point with one finger to the location of most of the pain. Then the knee should be palpated for warmth or tenderness. Sometimes loose bodies or the semilunar cartilage itself can be felt. The range of motion is observed, and at the same time the examiner can determine whether crepitus is present by placing his hand on the knee. Lateral and anteroposterior stability is then determined.

Following this roentgenograms should be taken and examined. The roentgenographic findings are of only negative significance in many cases. Tears in cartilage and injury to soft tissue will not be manifested in a routine roentgenogram. However, calcified menisci, loose osteocartilaginous bodies, osteochondritis dissecans and fractures of the tibial spine can all be seen by roentgenogram. Besides the conventional anteroposterior and lateral views, two special views are of great help in the diagnosis and localization of lesions of the bones of the knee.[2] (1) The intercondylar notch view taken with the patient's knee flexed reveals at times the presence of osteochondritis dissecans. Evidence of this condition cannot always be seen in other roentgenograms. This type of roentgenogram will also reveal loose bodies which may be caught in this region and injuries to the tibial

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From the Section on Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota.

Read at the annual meeting of the Northern Minnesota Medical Association, Crookston, Minnesota, August 24, 1946.

spines. (2) A vertical patellar view often will show evidence of osteochondritis and other abnormalities of the patella and the femoral condyles.

Diagnosis and Treatment of Specific Internal Derangements

An outline somewhat similar to the one presented by Badgley[1] follows. It is used for a brief description of diagnosis and treatment of specific internal derangements.

I. Semilunar cartilage.
    (a) Tears.
    (b) Cysts.
    (c) Congenital abnormalities.
    (d) Calcified meniscus.
    (e) Hypermobility or recurrent dislocation.
II. Lateral ligaments.
    (a) Rupture.
    (b) Cysts and adventitious bursae.
III. Injury to cruciate ligaments.
IV. Loose bodies.
    (a) Of synovial origin.
    (b) Of articular origin.
        (1) Osteochondritis dissecans.
        (2) Osteochondral fractures.
V. Soft tissue.
    (a) Adhesions.
    (b) Hypertrophic infrapatellar fat pads.
VI. Recurrent dislocation of the patella.
VII. Fractures of the tibial spine.

Semilunar cartilage.—The tear of the cartilage may be in the anterior, medial or posterior third, or may be of the so-called bucket-handle type. In the bucket-handle type the most severe locking occurs, and reduction with the patient under anesthesia sometimes is required for treatment. Diagnosis is based on a history of injury, locking, swelling and pain, and on physical examination either at the time of injury or later. Tenderness is almost always present over the injured cartilage and sometimes a definite click can be felt on flexion and rotation of the tibia on the femur. Treatment consists of excision of the cartilage. In my opinion, the entire cartilage should be removed, preferably through two incisions.

Cysts are probably congenital. They almost invariably occur on the lateral meniscus, and the swelling can be seen cephalad and slightly anterior to the fibular head. Catching and pain are often present and treatment is excision.

The "discoid" meniscus is the most common congenital abnormality. It usually involves the lateral meniscus. Diagnosis is made chiefly by means of the history. Patients who have this congenital abnormality have had "snapping knee" since childhood and pain in the region of the lateral meniscus. It is treated by surgical excision of the meniscus.

Calcified meniscus is found fairly commonly in older patients, and, as a rule, produces a few symptoms. Only occasionally do swelling and catching occur. I have encountered one case of true locking. If locking does occur, the meniscus should be excised; otherwise, conservative measures, including diathermy, should be used.

While hypermobility or dislocation without tear may be found, it exists less commonly than is generally thought. Usually it can be demonstrated at the time of operation that the anterior third of the cartilage is hypermobile. If the condition which arises in cases of hypermobile cartilage is severe enough to cause locking and swelling, the cartilage should be excised.

Lateral ligaments.—Either the tibial or the fibular collateral ligaments may become ruptured. The history of injury is always given. If the relaxation is only mild, the best treatment is to build up the quadriceps muscle. If the entire ligament is definitely disrupted, the defect should be repaired surgically.

Cysts and adventitious bursae occur with some frequency, and the diagnosis is often made only at the time of operation because the condition which arises in these cases resembles that in cases of torn cartilage or cyst of the cartilage. If a cyst is present it should be removed. Roentgen therapy or diathermy and injection of procaine hydrochloride should be used for treatment of adventitious bursae, and surgical treatment should be carried out only as a last resort.

Injury to cruciate ligaments.—Both the anterior and the posterior cruciate ligaments may be injured. Injuries of this type commonly occur in automobile accidents in which the patient's knees are bumped against the dashboard. While surgical procedures have been devised to repair the injuries, if the quadriceps femoris is strong and the collateral ligaments intact, tears in the anterior and posterior cruciate ligaments are not particularly disabling. Treatment should be directed toward restoration of strength in the quadriceps muscle which is invariably weakened.

Loose Bodies.—Cure in cases of osteochondromatosis in which loose bodies are derived from synovia, can be accomplished only by complete synovectomy. If but one or two loose bodies are present, however, these can often be removed and the patient will experience a good deal of permanent relief. Loose bodies should be removed, for their presence tends to traumatize the articular cartilage, and irreversible changes in the hyaline cartilage occur.

Osteochondritis dissecans, in which loose bodies are derived from the articular cartilage, is found most frequently in young men. In its early stage it is diagnosed when pain and swelling occur. Later when the dead fragment of cartilage and bone separates and becomes a loose body, locking frequently occurs. It is treated by removal of the loose body. The bed from which the loose body separates is usually curetted down to bleeding bone at the same time, although there is some reason to think that this may not be necessary.

Osteochondral fractures may occur as the result of a direct blow to the patella which transmits the blow to the femoral condyles, or of a direct blow to the femoral condyle itself. In cases of osteochondral fracture, patients must be observed carefully for evidence of necrosis of bone and cartilage.

Traumatic and hypertrophic arthritis with detached osteophytes is encountered frequently in elderly patients and, when locking occurs, the best treatment is surgical excision of the loose bodies.

Soft tissue.—Adhesions may occur after an intra-articular fracture with hemarthrosis. They prevent full range of motion and the adhesions usually must be cut surgically as they often are extremely strong and cannot be broken by manipulation carried out with the patient under anesthesia.

Hypertrophic infrapatellar fat pads will be found occasionally. The pads become pinched between the femur and tibia and cause catching, pain and effusion. If the symptoms warrant, surgical removal of the fat pads should be carried out.

Recurrent dislocation of the patella.—Diagnosis of this condition is often missed because an inadequate history has been taken. The patient should be questioned carefully as to whether he has seen his knee when it "goes out of joint." Sometimes it is so painful the patient does not think about how the knee looks, but as most dislocations of the patella are lateral and are observed easily even by the untrained eye, information concerning the episodes usually will help the physician make the diagnosis. In other cases, the physician sees the dislocation, for frequently it must be reduced with the patient under anesthesia. Treatment should be carried out early to prevent the occurrence of secondary arthritic changes in the knee and is directed toward reattaching the patellar tendon medially and distally. This treatment is satisfactory in most cases although occasionally fascial slings must be used in addition. In cases in which the lateral femoral condyle has flattened it must be raised by means of a wedge osteotomy.

Fractures of tibial spine.—These occasionally occur because of either anterior or posterior strain. The tibial spines are avulsed because of the pull of the cruciate ligaments. For treatment a cast is applied and usually patients recover satisfactorily. Careful observation is necessary so non-union or avascular necrosis of the spines may be found when it occurs.

Comment

In conclusion I would like to emphasize three points:

1. The main disability in all internal derangements of the knee is weakness of the quadriceps femoris and nothing in the way of a cure can be achieved unless the quadriceps is brought back to normal. This cannot be done simply by having the patient walk, but a systematic program of exercises against weight must be carried out preoperatively and postoperatively or, if surgical treatment is not undertaken, during the convalescence from the injury.
2. In cases in which removal of semilunar cartilage is necessary, the entire semilunar cartilage should be removed, not just the anterior two thirds. It has been my experience that catching and pain are produced occasionally by the posterior third of the cartilage when it is left.
3. In any case in which it is necessary to perform arthotomy the patient should be assured

(Continued on Page 83)

RECTAL IMPALEMENT

Report of an Unusual Case

C. T. EGINTON, M.D., M.S. (Surg.)
Saint Paul, Minnesota

WOUNDS of the rectum by impalement are of infrequent occurrence; however, they are of interest because of the frequently bizarre accidents from which these injuries are sustained, the extensive damage often done to contiguous tissues, and the serious danger of peritoneal contamination.

During the past few years there have been reports of an occasional case or small series of cases of traumatic perforations of the rectum, most of these being due to instrumentation, enemata or air pressure. Reports of injury by impalement have been quite rare. This particular trauma is apparently primarily a haying hazard, most of the reported cases occurring in farmers who have fallen from hay stacks onto pitchforks, rakes, or other farming implements. However, miners, well-drillers, and, in fact, nearly all industrial workers are occasionally subject to this type of injury.

I wish to report a case of rectal impalement unusual in respect to etiology as well as involvement of adjacent structures.

Case Report

H.M., a twenty-year-old Thlingit Indian, male, was brought to the Whitehorse General Hospital, Whitehorse, Yukon Territory, Canada, at 11:30 p.m., December 13, 1945, complaining of intense abdominal pain and bleeding from the rectum. At 2:30 p.m. that day, returning from his trap line near Teslin Lake, Y.T., he was standing on a toboggan type sleigh behind his dog team. As the descent to the lake down a steep bank commenced, the dogs got out of control and left the trail. When the patient noted that the sled was headed for a clump of bushes, he attempted to sit on the sleigh and control its course by dragging his feet in the snow. As the toboggan tipped to one side he was thrown clear and landed on a branch of wood about two feet long and about one inch in diameter. At the time of this accident the dog team was travelling at high speed, probably about twenty miles per hour. He was impaled on this piece of wood with very great force. The branch penetrated his rectum and the patient thought it broke off as he heard a distinct snapping sound. He lost consciousness, however, immediately afterward. When he regained consciousness, the dog team was over half way across Lake Teslin, which would take between eight and ten minutes with the team travelling at twenty miles per hour. The patient extracted the stick from his rectum and began to walk to his camp, a distance of two miles. This walk was through deep snow and required great effort. He arrived at his camp about 4:30 p.m. and remained there until 6 p.m. when the Royal Canadian Mounted Police car arrived and transported him to Whitehorse, a distance of 114 miles. He was admitted to the Whitehorse General Hospital at 11:30 p.m., nine hours after the injury. There had occurred a moderate amount of bleeding from the rectum during this period. The pain in the rectum had intensified and had now become associated with severe abdominal pain, most marked in the suprapubic area. Shortly after admission to the hospital, he passed about 200 c.c. of bloody urine. There was no dysuria, and no gas was noted in the urine.

Physical examination at the time of admission revealed a well-developed, well-nourished Thlingit Indian male, in acute distress, conscious and rational, lying in supine position. Blood pressure was 100/70, heart rate 84, oral temperature 103°F. The entire abdomen was rigid and tender, most markedly below the umbilicus. There was no distention, but the abdomen was silent to auscultation. There was a ragged superficial abrasion in the anterior part of the anal skin extending into the mucosa. Digital examination revealed a perforation in the anterior wall of the rectum about 9 or 10 cm. from the anus. There was a small amount of semi-solid fecal material in the rectal ampulla.

Ten hours after the injury, the patient was taken to the operating room. With the patient in the Sims position, a proctoscopic examination under spinal anesthesia showed a ragged rent in the anterior rectum about 10 cm. from the anal margin. It was about 4.5 cm. long and gaped about 2 cm. Through this could be seen a loop of small bowel surrounded by fecal material. The perforation extended through the rectovesical pouch of Douglas into the posterior wall of the bladder (Fig. 1). There was no leakage of urine apparent at this time and it could not be determined if the bladder mucosa was intact. Several large fecal masses were removed from the pouch of Douglas with sponge forceps and suction; the rectal perforation was closed with four interrupted No. 0 plain catgut sutures. The patient was then placed on his back. A left paramedian incision was made below the umbilicus, splitting the rectus muscle. Upon incising the peritoneum, a moderate amount of sanguineous stercoraceous material was encountered. As much as possible of this was removed by suction and sponging. The pelvis was explored and the peritoneal tear was closed and anchored above the ecchymotic area on the posterior wall of the bladder. Perforation of the bladder was not demonstrable at this time, so no sutures were placed in the bladder. However, the damaged area was covered with peritoneum from the cul de sac. A loop of sigmoid colon was brought into the abdominal incision; the two pillars were sutured together for a distance of 8 cm. and were anchored laterally to avoid fenestration, and the abdomen was closed.

On December 15, 1945, the colostomy was opened with the cautery. Borborygmi were audible on that day. The patient's general condition improved rapidly; however there occurred frequent watery stools with a uriniferous odor through the rectum and colostomy.

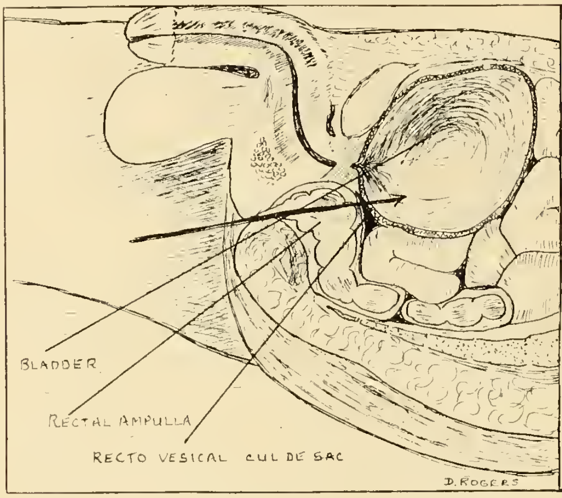

Fig. 1. Sagittal section shows path of impalement.

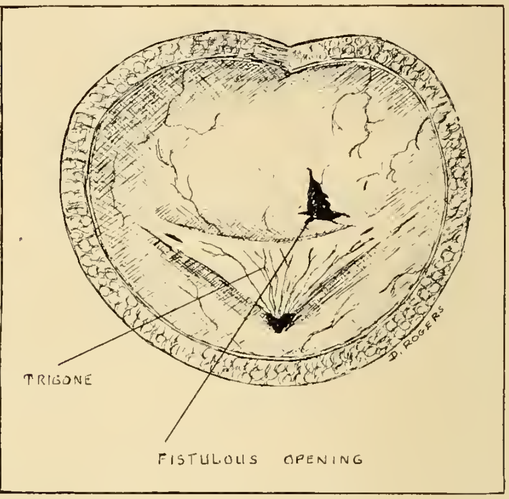

Fig. 2. Posterior wall of bladder.

Cystoscopy was performed on December 27, 1945, when it was deemed that the patient's general condition warranted such a procedure. No obstruction to the insertion of the cystoscope was encountered. The bladder was filled with cloudy urine containing flecks of mucopurulent material. The mucosa over the entire posterior wall and trigone was uniformly reddened and edematous. The ureteral orifices appeared normal. There was a large ragged perforation, 2 by 1 cm., triangular in shape, in the retroureteral pouch, about 2 cm. above the trigone ridge. The edges of this tear appeared necrotic. Fluid could be seen to run directly into the rectum and cloudy fluid return. It was possible, while clear fluid was running into the bladder, to visualize the lumen of the rectum through the fistula (Fig. 2).

On January 4, 1946, the patient was again taken to the operating room where spinal anesthesia was induced. He was placed in an exaggerated lithotomy position, and a transverse, curved incision was made 2 cm. anterior to the anus. This was carried down through the perineal body; and the rectourethralis muscle was transected. Denonvilliers' fascia was dissected, exposing the fistula above the prostate. The rectum was mobilized well above this area. The fistula was then excised and the edges of the bladder defect freshened with the scalpel, and the muscular layer of the bladder was united with chromic No. 00 catgut continuous suture, avoiding the mucosa. Denonvilliers' fascia was approximated over the bladder suture line with another row of interrupted sutures. The levator ani leaves were pulled together in front of the rectum with three interrupted sutures of chromic No. 1 catgut. The mobilized rectum was pulled toward the anus as far as possible, the first, most superior suture, being carried into the anal sphincter to anchor the rectum in its anal position. The redundant rectal mucosa was excised and the remaining defect closed with a continuous suture of No. 00 chromic catgut. The perineal muscles were reunited with plain No. 0 catgut interrupted sutures and the skin was closed with subcuticular plain No. 0 catgut. An urethral catheter was left inlying.

No leakage occurred at the site of repair, the wound healed primarily, and the patient recovered without incident from this operation. On January 19, 1946, a clamp was applied to the colostomy spur. On January 26, 1946, the inlying catheter was removed and the patient began voiding spontaneously four to five times each day. The bladder apparently had normal capacity. The colostomy spur was completely obliterated by January 28, 1946. Urinalysis on February 4, 1946, was negative. On February 5, 1946, cystoscopy was again performed. There was no cystitis; the urine was clear. At the site of the previous fistula, there was only a dimple in the mucosa, completely healed. Four hundred c.c. of 12 per cent sodium iodide solution were instilled into the bladder and a cystogram taken. This showed no leakage into the rectum. The bladder outline was normal except for a very slight denting at the site of the former fistula. Digital examination of the rectum showed firm non-tender scar tissue. On March 8, 1946, the patient was returned to the operating room. Under intravenous sodium pentothal anesthesia, the colostomy was closed extraperitoneally. The peritoneum, however, was undermined and pulled over the suture line in such a manner that a sling for the sigmoid loop was formed. Thus it was possible to close the abdomen firmly in layers, including the peritoneal folds. Recovery was uneventful, and the patient began having normal bowel movements in four days.

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CHYLOTHORAX: PREGNANCY IN AN ARRESTED CASE

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CHYLOTHORAX is an effusian of chyle in the pleural cavity due to lesions of the thoracic duct or of its radicals. It is a relatively rare condition and often of obscure etiology. Thirty per cent of the cases are said to be due to trauma, 18 per cent to cancer of the pleura, 15 per cent to occlusion of the left subclavian vein, 7 per cent to compression of the thoracic duct, 7 per cent to sclerosis of lymph vessels, 7 per cent to lymphangiectasis, and 16 per cent to malignant lymphoma and blood parasites (probably filaria).[5] Mortality is high, being somewhat less than 50 per cent.[4] This is readily understood when the etiology is taken into consideration. According to Brescia,[1] Bartolet first described this entity in 1633. Hoyer[2] reported the eighty-fifth case in 1938, and in 1944 Jahsman[3] reported three cases, bringing the total number up to 105.

Case Report

The case I wish to report, the first pregnancy in an arrested case, is that of C.E.D., a white woman, aged thirty-one, first seen on January 18, 1943, when she complained of gastric distress, anorexia, menorrhagia and malaise.

She had had lobar pneumonia in 1933 and said she had not felt well since. She also had an uncomplicated appendectomy in 1937. Physical examination at that time revealed a normal chest. There was some tenderness in the right mid-abdomen, and the uterus was fixed in the right pelvis. The hemoglobin was 70 per cent. No definite diagnosis was made but she was put on a tonic regime and responded so well she was discharged February 9, 1943.

On June 1, 1943, I was called to her home and found her confined to her bed with a history of having had a "cold" for a week or so. She looked very sick, and casual examination revealed lungs full of moist râles with the left chest half full of fluid. She was sent to Midway Hospital by ambulance and was admitted with a temperature of 101.8° which rapidly went up to 104°, and then quickly subsided under sulfathiazole.

On admittance, urine showed 2 plus albumin, hemoglobin 58 per cent, Wassermann negative, RBC 4,240,000, WBC 10,600 with normal smear and differential count. X-ray of the chest showed considerable increased density in the left base due to effusion, and the heart was displaced to the right. There was no evidence of lung or mediastinal infiltration. On June 3, 1943, a re-ray with horizontal and vertical left lateral views of the chest showed a freely shifting effusion.

On June 4, I aspirated 700 c.c. of milky fluid which was alkaline in reaction and had a specific gravity of 1.014. Culture showed a few Gram-positive diplococci. Guinea pig inoculations were reported negative on July 17 and July 30. Re-ray of the chest showed considerably less effusion in the left basal area than on the previous study, with considerably less displacement of the heart to the right. A moderate degree of effusion still remained basally on the left. No definite lung infiltration was demonstrated.

Fluid gradually re-formed in the left chest, and on June 12 respirations were again embarrassed and 800 c.c. of milky fluid were aspirated. Re-ray showed no change except possibly a slight decrease in the fluid densities in the left base.

Feeling that we were accomplishing nothing by aspiration and were only wasting previous body fluid, we pursued an expectant course, but had to aspirate her again on June 18 because of marked respiratory embarrassment. Fluid became less and less and finally was entirely absorbed as verified by x-ray examinations which revealed the heart normal in size and configuration, the lungs entirely normal with evidence of adhesive pleurisy in both costo-phrenic angles.

On June 20, 1945, two years after the last aspiration, she returned to my office feeling fine but thought she might be pregnant, her last menstrual period having been on May 5, 1945. Examination at this time revealed a normal chest and abdomen, blood pressure 130/80, hemoglobin 84 per cent, urine 2 plus albumin, and a positive Friedmann test. The question then arose as to what advice to give her. She was very anxious to have a baby and her husband felt the same way. A search of the literature revealed no record of pregnancy following chylothorax. I finally decided to adopt expectant treatment, feeling that if we could bring the fetus to viability without too seriously endangering the mother we could do an elective cesarean section and avoid the strain of labor.

Dr. McKelvey, head of the department of obstetrics at the University of Minnesota, became interested in the patient, and in October, 1945, I sent her to the University Hospital at his request for observation and study with particular reference to vital capacity studies.

His report of October 20, 1945, was as follows: blood pressure on admittance 156/98, on the following day 134/76 and on the day of discharge 138/90. A catheterized urine specimen showed 2 plus albumin and occasional white blood cells, and hemolytic streptococcus was cultured from it. Uric acid was 4.6 mg. Other chemistry reports were normal. The venous pressure was 11.5 cm. of saline. Circulation time was, arm to tongue, 15 seconds, arm to lung 5 seconds. An electrocardiogram was normal. An accurately measured vital capacity was 2.88 liters. Chest x-ray showed an old adhesive pleurisy. The blood cholesterol was 390 mg. per cent.

Presented at the meeting of the general staff of Midway Hospital, Saint Paul, Minnesota, June 5, 1946.

Dr. McKelvey's conclusions were: "The patient has a mild pregnancy toxemia. There is no evidence of active chylothorax at present and no evidence of disturbance of pulmonary circulation or of the heart as a result of the previous episode. I have not been able to find any case report in the literature of a pregnancy association with chylothorax. However, in my opinion, there is no good reason to believe that there should be any change from the present state as a result of the pregnancy."

Her course from here on was uneventful except for varying rises and falls in blood pressure and varying amounts of albumin in the urine, until December 7, 1945, when her blood pressure was 150/90, albumin 4 plus, hemoglobin 70 per cent, and she did not feel very well. I ordered her home to bed. On December 14 she complained of severe epigastric pains and felt miserable. I had her admitted to Midway Hospital on that day and administered morphine for relief of pain. We were then in a position to weigh her every day and check her intake and output, blood pressure, fetal heart tones, and urine, hoping to delay a cesarean section as long as possible, as she was still two months from term. Her blood pressure ran fairly constant, about 150/90, and urine specific gravity was 1.012 to 1.016, with a constant 4 plus albumin and occasional white blood cells. Hemoglobin was 9.9 gm., Rh factor positive, urea nitrogen 26.5 mg., and uric acid 7.5 mg.

On December 18, Dr. Louis Freidman, who had been instrumental in interesting Dr. McKelvey, saw her and his impression was that she was suffering from a toxemia of pregancy, pre-eclampsia and secondary anemia, and advised continuance of conservative treatment in an effort to increase the viability of the fetus.

On December 27, 1945 (due February 12, 1946), her condition not having improved, I did a classical cesarean section, incising the abdomen under novocaine infiltration and the uterus under sodium pentothal anesthesia. The placenta was found attached to the anterior uterine wall. A male child weighing 4 pounds 8 ounces was delivered, the placenta extracted, uterus closed, tubes ligated and abdomen closed without drainage.

Before operation her blood pressure was 158/104, with fetal heart tones 136, urine 4 plus albumin, hemoglobin 10.4 gm. The pre-operative diagnosis was pre-eclampsia with arteriosclerosis. Postoperatively she was given 500 c.c. of whole blood, and this was repeated on January 3, 1946. Her postoperative course was uneventful and she was discharged from the hospital on January 10 with a blood pressure of 146/84; urine was alkaline, amber colored, specific gravity 1.016, 4 plus albumin, 3 to 5 R.B.C., 15 to 25 W.B.C.; hemoglobin was 12.4 gm.; temperature was 98.4°, pulse 88, and respirations 18.

The baby, weighing 4 pounds 8 ounces at birth lost 3⅛ ounces during the first three days and then gradually gained, until on discharge from the hospital January 31, he weighed 6 pounds 9 ounces. Six months following birth he was perfectly normal and steadily gaining in weight. The mother has been perfectly happpy, feels well, does all her own work but still has a blood pressure of 140/90, 4 plus albumin and 70 per cent hemoglobin.

Summary

1. In this case we were unable to establish an etiological factor for the chylothorax.

2. The relative rarity of the condition is emphasized by the fact that this is the 106th case reported and the first of pregnancy in an arrested case.

3. Diagnosis is dependent on aspiration of chylous fluid.

4. In this case we achieved arrest of the chylothorax by rest and supportive measures and by discontinuing aspiration. Pregnancy was treated conservatively and by elective cesarean section.

5. Evidently the pregnancy had no effect on the chylothorax nor the chylothorax on the pregnancy in this case.

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Discussion

Dr. L. L. Freidman: This case is a most interesting one, and apparently very rare. A thorough search of the literature did not reveal a single case of pregnancy with chylothorax.

No specific conclusions from an obstetrical standpoint can be drawn from this case. Certainly the pregnancy did not influence the chylothorax, and I don't believe the chylothorax influenced the pregnancy, except from an increase in respiratory embarrassment during the last few weeks. Unfortunately, the patient developed a pre-eclampsia. She was put to bed and not only did not improve, but her diastolic blood pressure increased and urinary findings persisted on absolute bed rest.

Dr. Edlund sectioned this patient at viability. Undoubtedly without the toxemia she could have been allowed to deliver normally.

The toxemia may be classified as an arteriosclerotic superimposed with pre-eclampsia. We have no direct evidence of this, except a persistent albuminuria prior to pregnancy and a resultant hypertension and albuminuria three months postpartum.

This is a most interesting case, and so rare that it may be called an academic curiosity. I have urged Dr. Edlund to prepare the case report for publication, which he has so ably done.

OBSERVATIONS ON A MILD FORM OF EPILEPSY

LT. C. M. JESSICO, MC, USNR, LT. COMDR. K. H. FINLEY, MC, USNR, and
LT. COMDR. T. W. RICHARDS, HS, USNR

This is a report of studies made in the U. S. Naval Hospital, San Leandro, California, on patients who were returned to the United States from the Pacific area because of a history in which convulsive seizures were described or suggested. Though a large proportion of naval and marine patients suspected of having epilepsy while overseas were sent to this particular hospital, it was necessary to restrict the present report to a relatively small number.

For the most part, the studies made can be divided into four groups: (1) physical, neurological, psychiatric and laboratory examinations plus observation on the ward; (2) the water-pitressin test (as introduced by McQuarrie[7,8]); (3) psychological examination, and (4) electroencephalography.

Obviously, an epileptic history and a record of a previous diagnosis of epilepsy were important criteria in making the final diagnosis. However, we felt that without confirmation by means of at least one of these four methods of study, the final diagnosis of epilepsy should not be made.

Of the four approaches to the patient mentioned, the first—that of physical examination, et cetera—needs no further description. It might be well to discuss briefly each of the remaining procedures.

The water-pitressin test involves hydration with fluids by mouth, and antidiuresis by the use of pitressin parenterally. It has been shown that a convulsion can thus be induced frequently in an epileptic but not in a non-epileptic.[8] The mode of action is not understood but may be an alteration in intracellular and extracellular electrolytes since sodium chloride inhibits a convulsion.[8] The test, as standardized at this hospital, includes the oral intake of 500 c.c. of fluid every hour for eleven hours or a total of 6,000 c.c., and then every two hours for ten hours making an additional 2,500 c.c. Pitressin, 0.5 c.c., is given parenterally every two hours for a total of ten injections. If a grand mal seizure occurs at any time, the test is discontinued.

Psychological examination consisted of the following tests: Thematic Apperception Test, Rorschach, Minnesota Multiphasic Inventory, parts of the Bellevue-Wechsler Scale and the Cornell Selectee questionnaire. We were interested in the personality pattern and in detecting signs of psychological deficit which might be associated with deterioration.

Electroencephalograms were obtained on all the patients and were classified as normal, borderline* or abnormal. A six-channel Grass electroencephalograph was used. Eight electrode placements (four over each hemisphere: frontal, postfrontal, parietal and occipital) constituted the routine procedure used. The bipolar method of recording was employed. When the clinical history or other laboratory findings indicated, ten to sixteen electrode placements were applied. A two to three minute period of hyperventilation was employed in every instance, and a glass of fruit juice was given the patient one-half hour before the test.

This report covers seventy-three consecutive cases admitted to the neurology ward with a diagnosis of epilepsy. Except for the case of one man on whom the water-pitressin test was not made, each was subjected to the four methods of study described above.

The final diagnoses established for the group of seventy-three patients were:

Epilepsy	57
Psychoneurosis, otherwise unclassified	6
Hysteria	3
Personality disorder	3
Mental deficiency†	1
Narcolepsy	1
Migraine	1
No disease	1

Though not typical because of the great number of seizures, the manner in which the patients were

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*Borderline is used for the types of EEG patterns which cannot be readily grouped as either definitely normal or abnormal. These borderline tracings include, for the most part, the following types of patterns: (1) low amplitude records which show no definite frequency at the standard rate of amplification (i.e., 50 microvolts when equivalent to a vertical deflection of the needle a distance of one-half centimeter); (2) tracings which show occasional random, medium or high voltage, slow cycles throughout; (3) records with the more than average number of low amplitude (less than 25 microvolts) 18 to 30 per second cycles, and (4) tracings containing an abundance of high voltage (over 25 microvolts) 18 to 30 per second cycles, usually occuring in random distribution rather than in paroxysmal bursts of rapid activity, which latter are included under the abnormal group.

†If a patient had mental deficiency and epilepsy, the final diagnosis was epilepsy.

studied is exemplified by the following summary of a case:

M. R., twenty years of age, was on active duty for one year and seven months before he was admitted to the sick list. He was overseas for one year and had combat experience.

He was admitted to the hospital in May, 1945, with the complaint of "spells of blackout" two or three times a year since about thirteen years of age. In some spells, he bit his tongue. Usually he had a sufficiently long warning so that he could hide before he lost consciousness. In April, 1945, he had a spell in the presence of naval personnel and awoke to find himself in sick bay. In this hospital, he gave a further history of "blank" episodes of a few seconds' duration once or twice a week since January, 1945, and intermittent left-sided headaches during the past year.

In the family history, it was learned that the mother was nervous and the father had trouble with his back. The patient had one sibling, a sister, who died of a mastoid complication at the age of twenty-three years. A maternal grandmother probably had epileptic seizures and later died of cancer of the breast. Two cousins had had convulsions.

The patient gave a history of a normal birth and the usual childhood diseases, including scarlet fever. He considered himself well except for the "spells." He bit his nails until shortly before admission. His home environment was unsatisfactory because his parents did not get along well together and there was a "funny atmosphere around home." He was expelled from high school once and quit school at the age of seventeen years. He has not married. Before enlistment, he worked in garages and traveled with a carnival. He drank considerable liquor overseas.

The physical and neurological examinations were essentially negative. Psychiatric examination revealed a restless, apprehensive, mildly depressed young man who worried over what people would think of him because of his spells. Psychological tests showed the man to have average mental capacity. The Rorschach revealed considerable anxiety and suggested a strongly traumatic background. The electroencephalogram was abnormal by virtue of the ease with which the pattern broke down to over-breathing and by a suggestive spike and wave contour of some of the slow cycles. Roentgenograms of the skull were negative. Routine laboratory examinations, which included a urinalysis, complete blood count and a blood Kahn, were negative.

On June 2, the patient had a grand mal convulsion witnessed by a nurse. On June 13, a grand mal convulsion was induced by the water-pitressin test after four injections of pitressin. Dilantin sodium, 1 gm. twice daily, was prescribed.

The age of the entire group ranged from seventeen years to forty-two years. A history of seizures prior to enlistment was elicited in those with a final diagnosis of epilepsy in thirty-four cases (60 per cent), and of these, eight said they had had only one attack. Of the twenty-three cases with a history of no seizures prior to enlistment, six had only one attack prior to admission to this hospital. Three of the established cases had only petit mal attacks, and the rest had grand mal seizures either alone or in combination with other forms. (It is not unlikely many petit mal cases have been unrecognized in the service.) The age of the first spell ranged from infancy to forty-two years. All but two had the first seizure before the age of thirty years.

Fourteen of the entire group had had actual combat experience, and twelve of these had had an established diagnosis of epilepsy. Nine had combat experience before the first seizure but no relationship could be determined. No individual in this series had seizures which suggested very strongly a relationship to head trauma. One patient had his first seizure one month after he was dazed by a blow to the head. Of the entire group, forty-three gave a history of head trauma of varying severity, and of those with the final diagnosis of epilepsy, thirty-two gave such a history, so that a larger percentage of the established cases of epilepsy gave such a history than those of the entire group. A few inconclusive abnormal neurological signs in several patients were discounted because of lack of supporting evidence of an organic lesion. Pneumoencephalograms on three patients were normal. It was impossible to make a worthwhile estimate of the effect of alcohol on the epileptic seizures. However, three claimed they had seizures only after heavy drinking. Of the entire group, a history of what might be termed a severe illness was elicited in sixteen, which included two cases of dengue fever. There appeared to be no relationship, except possibly for the two patients who had dengue fever and had their first seizure within a year of that illness. A family history of fainting spells or epilepsy was elicited in 39 per cent of the entire group and in 37 per cent of those with the final diagnosis of epilepsy. The figures were reversed slightly when only the terms epilepsy or convulsions had been used, and then 22 per cent of the entire group and 23 per cent of the definite epileptics had a positive family history.

In 40 per cent of those finally diagnosed as epileptic, a routine psychiatric examination had revealed evidence of mental deficiency or a personality disorder of sufficient degree to disqualify the individual for an early return to duty in the service. Results of the psychological tests suggested that of this group of fifty-seven men, forty-two gave evidence of appreciable maladjustment. Eight patients showed signs of psychological deficit. Six were mentally deficient. In fourteen cases, trends in the direction of possible psychotic development were in evidence. It must be pointed out that these men had been under the stress of overseas duty during the war. A relationship between the epileptic seizures and personality difficulties was not obvious, but a direct study of that problem was not made.

Electroencephalograms on the group of established epileptics were definitely abnormal in only 54 per cent of the cases. Another twenty-eight per cent were borderline. The following table gives the percentage of normal, borderline and abnormal records in this group of epileptics as compared with a larger group studied in civilian life.[4]

	Normal	Borderline	Abnormal
Military Group:			
1. Admission diagnosis of epilepsy (73 patients)...	30%	26%	44%
2. Final diagnosis of epilepsy (57 patients)	18%	28%	54%
Civilian Group:			
1. Final diagnosis of epilepsy (626 patients)	15%	10%	75%

In the military group, the seventy-three individuals admitted to the hospital with a question of epilepsy had a lower percentage of abnormal EEGs than the fifty-seven where such a diagnosis was later established. However, the military group of established epileptics had a lower percentage of abnormal EEGs than the civilian group, which implies that the convulsive states of the military group were of a milder character.

There was nothing consistent in the character of the abnormal EEGs. Most of them contained slow cycles of varying frequencies and about one-fourth had organized rapid cycles (frequencies between 18 to 30 cycles per second) usually with slow activity. In only one of the seventy-three cases was a typical spike and wave pattern obtained. Yet, several of the patients had petit mal attacks, although all but three had grand mal seizures also.

It is important to note that almost 50 per cent of the cases given a final diagnosis of epilepsy had normal or borderline EEGs. This demonstrates that a diagnosis of epilepsy is not ruled out by a normal EEG. Also a few questionable cases, in which the diagnosis of epilepsy was ruled out, had abnormal EEGs, confirming the fact that an abnormal EEG is not in itself proof of epilepsy. Like most laboratory tests, the EEG should only be evaluated when considered in the light of other clinical and laboratory findings.

Seventy-two out of the seventy-three cases had a water-pitressin test. The test was not completed in six cases. In thirteen, a grand mal convulsion was induced. Not excluding the incomplete tests, twenty-three per cent of the patients with the final diagnosis of epilepsy had a positive test. Twitching movements of the extremities occurred in four more. The diagnosis of epilepsy was made in three of these. In a previous group, which included forty-four cases with the final diagnosis of epilepsy, 55 per cent had positive tests. It may be assumed, therefore, that the potential for seizures is less in the present group than in the previous group. In the present group, one patient had a seizure after the second injection of pitressin. All others had seizures only after at least four injections of pitressin were given. One patient, an officer, had no seizure until eight hours after the tenth injection of pitressin. Two patients had hysterical seizures and a third a probable hysterical reaction.

Summary

A final diagnosis of epilepsy was made in fifty-seven cases out of a total of seventy-three suspected of epilepsy. Of these, 60 per cent gave a history of seizures prior to enlistment.

There was no apparent close relationship between the onset of seizures and combat experience, head trauma, or serious illness in this group, except for the possibility of two cases of dengue fever, following which seizures occurred. A definite family history of convulsions was elicited in 23 per cent of the patients with the final diagnosis of epilepsy. Evidence of a personality disorder or mental deficiency was found in 40 per cent of the established epileptics. Psychological tests gave evidence of appreciable maladjustment in forty-two cases of this group of fifty-seven epileptics. The significance of these findings was not determined. The electroencephalogram was definitely abnormal in only 54 per cent of the cases in which the diagnosis of epilepsy was considered justified. A comparison of this military group of established epileptics with a civilian group revealed a lower percentage of abnormal electroencephalograms in the former, which implies that the con-

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USES OF RADON OINTMENT

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SINCE the inception of roentgen and radium therapy and their widespread and effective use in treatment of cancer, ulceration due to injury to the skin has presented a serious problem. The cutaneous damage may have resulted from the repeated treatments required to destroy a malignant lesion or from some individual idiosyncracy, as the tissues of some people will not tolerate an amount of irradiation harmless to most. In either case, the radiodermatitis may not appear for some years after the exposures. It often appears as a telangiectasis which is permanent; subsequent trauma may produce a chronic ulcer. The ulceration differs from most inflammatory ulcers in that the poor blood supply, due to sclerosis of the vessels, nullifies any tendency to heal spontaneously or following the administration of stimulating ointments. This damaged vascularization also discourages attempts to excise the ulcer and graft successfully. The indolent ulcer refuses to heal and eventually a malignant lesion is prone to develop.

These indolent ulcers have presented a serious problem to radiologists and dermatologists for many years, and many ointments and medicinal preparations have had their vogue. However, these preparations fail to afford complete satisfaction. Preparations of the leaves of Aloe vera, ointments containing sulfonamide compounds, gramicidin ointments, aluminum subacetate washes, petrolatum irradiated with ultraviolet rays, and so forth, have shown some promise in the past but have not been absolutely satisfactory.

The type of therapy discussed in this study is the use of alpha particles provided by radon absorbed in petrolatum or lanolin. Alpha particle treatment was described by Fabry[1-3] in 1925 and 1926. He used thorium X in petrolatum with encouraging results. Since 1930, Uhlmann[6,7] has continued this form of treatment, employing radon in petrolatum or lanolin.

The alpha particle is the nucleus of the helium atom with two positive charges and is emitted by radium in its disintegration to form radon, and by radon in its decay to become the elements of lighter atomic weight known as the active deposit. The radiations producing the ulceration of the skin are beta rays, gamma rays and roentgen rays. The alpha particle is never used in cancer therapy. Its range is limited to a few centimeters in air and it is stopped by the thinnest glass wall or by a piece of paper. As all radium and radon used in cancer therapy are enclosed in metal, alpha particles are not utilized.

Hence, while alpha particles are a component of the irradiations given off by radium and its decay products, they had no part in producing the injury but are a formerly unused portion of the irradiations.

Preparation

In cancer therapy, radium salt or radon is utilized. After radium bromide or chloride has been dissolved in water, the gas radon is collected and purified. Radon decays rapidly; its half-value is 3.85 days. Any clinic using a radon plant for cancer therapy can readily manufacture radon ointment. The gas is absorbed readily in petrolatum or lanolin; it is sixteen times as absorbable in petrolatum as in water at room temperature. Extremely weak preparations are used; in cancer therapy 50 mg. of radium sulfate or 50 millicuries of radon are common units of treatment. Radon ointment is commonly used in the strength of 40 to 100 microcuries (0.04 to 0.1 millicurie) to the cubic centimeter or gram of petrolatum. Metal seeds containing radon are broken into a jar of petrolatum and the strength of the preparation is measured by its gamma radiation.

The range of the alpha particle is only 0.1 mm. in tissue but penetration of the petrolatum favors a deeper absorption. Experiments quoted by Low-Beer and Stone[5] indicate that radon may be absorbed even through intact skin.

Technique

The treatment of the ulceration with radon ointment usually is patterned after that suggested by Uhlmann. Radon ointment is freshly prepared in the strength of 30 to 100 microcuries per cubic

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From the Section on Therapeutic Radiology, Mayo Clinic, Rochester, Minnesota.

Read at the annual meeting of the American Therapeutic Society, Atlantic City, New Jersey, May 11 and 12, 1946.

centimeter of petrolatum. It is spread over the surface of the ulcer in a layer 4 to 5 mm. thick and immediately covered with a piece of rubber, oilcloth or other material, sealed in place with overlapping strips of adhesive. This is done to retard the escape of radon from the petrolatum. The ointment is left in place for eight hours and then removed. The application is made once a week for eight or ten weeks with freshly prepared ointment each time. Usually, by the end of the third application healing becomes evident. If there is no evidence of healing, a malignant lesion is probably present and the radon ointment treatment may be discontinued. It is important to know that radon ointment therapy is valueless in the face of malignant change.[7]

Williams and I[4] previously reported the experience with the first two patients treated at the Mayo Clinic with radon ointment; these were treated in 1943. These two cases provided the sternest test possible, as both chronic indolent ulcers had already undergone malignant change. Radium therapy was employed to control the cancer and radon ointment to stimulate healing of the ulcer. The first patient, a woman presenting an ulcer in the right groin, which had not healed completely for twenty-four years, obtained palliation and partial healing over the next two years, but the malignant process could not be controlled entirely. The second patient, a man, had a huge perianal ulcer of seven years' duration following roentgen treatment for pruritus ani in 1925. Biopsy from several regions showed low grade carcinoma. The cancer was arrested by radium therapy and the huge ulcer healed completely with the application of radon ointment.

Since 1943, several patients who had chronic ulcers have been treated. The ulcers treated had not undergone malignant change. Definite healing appeared in six of ten of the ulcers treated; of the four failures three appeared due to insufficient treatment, the patients neglecting to return after only one or two applications.

Other Uses

Besides chronic ulcers due to roentgen or radium irradiation, treatment with radon ointment has shown promise in two other conditions. Cavities and ulcers of the vaginal wall with foul necrotic slough, which appear in some people following radium therapy for carcinoma of the uterine cervix, seem to represent delayed healing. The tissues of these patients do not seem to react normally to radiation and do not heal in the usual manner.

These ulcers of the vaginal wall are as resistant to ordinary stimulating medications as roentgen ulcers of the skin. During the past two years, seven patients who had this condition were treated with radon ointment; four showed excellent response. The three not apparently helped abandoned treatment after one or two applications.

Another use made of radon ointment in 1945 was an attempt to stimulate epithelization following operation to construct a vagina in cases of congenital absence of that structure. Grafting of the newly formed vaginal cavity appeared hastened and even the deeper tissues appeared more flexible and resilient after radon ointment therapy than when it was not used. The surgeon performing these operations was pleased with the results and referred all his patients, following this rare operation, for postoperative treatment. The radon ointment was spread over the plastic mold used to maintain patency of the newly formed vagina. Treatments were eight hours long and were given once a week for eight or ten weeks. Twelve patients were treated in 1945 with marked benefit to all.

Conclusions

Radon absorbed in petrolatum or lanolin has so far shown promise in the treatment of chronic indolent ulcers with poor blood supply, occurring usually many years after irradiation therapy. This type of ulcer has proved exceedingly refractory to other forms of treatment. In the future these ulcers may become more common, as irradiation is pushed to its limits in combating cancer.

Radon ointment therapy is tedious, extending over several weeks' time, and is not by any means successful in every case. Some patients are not helped. If malignant change has occurred, healing will not ensue. It is important to remember that radon ointment has no effect on malignant tissue. Additional suggested uses are treatment of necrotic ulcers of the vaginal wall, which occasionally follow irradiation therapy of cancer of the uterine cervix, and to stimulate growth of granulation tissue after the operation for construction of a vagina in patients who have had a congenital absence of that structure.

(Continued on Page 59)

CLINICAL-PATHOLOGICAL CONFERENCES

ACUTE ISOLATED MYOCARDITIS (FIEDLER'S MYOCARDITIS)

A. J. HERTZOG, M.D., and W. D. HAYFORD, M.D.

Minneapolis, Minnesota

Dr. Hayford: This case (A-46-1626) is that of a thirty-one-year-old white woman who was admitted to the Minneapolis General Hospital on August 20, 1946. She was complaining of a feeling of tightness across the chest and of a very rapid heart beat. Her past health had been good. She had had scarlet fever at some time during her youth. She was the mother of four children. There was no history of hypertension. In May of 1946, she was confined to bed for one month because of swelling of both legs. She had less severe cardiac palpitation at this time. The details of this illness are not known.

Physicial examination on admission to the hospital showed a pulse rate of 220 per minute and regular. The temperature was normal. The blood pressure was 94/80. She was a small, poorly nourished white female in no acute distress. The point of maximal impulse of the heart was found in the fifth interspace about 8 cm. to the left of the midsternal line. The tones were very forceful. There were no murmurs. The lungs were clear. The liver was not palpable. There was no evidence of congestive heart failure. The remaining examination showed nothing of note. An electrocardiogram showed a tachycardia with a rate of 220 and slurring of the ST segment in all three leads (Fig. 1). The tachycardia was thought to be supraventricular in origin. The Kline and Rytz tests were negative for syphilis. Blood chlorides were 638 mg. per cent. Urinalysis and leukocyte count were not completed, due to her short stay in the hospital.

At 3:00 A.M. on August 21, she was given 4.0 c.c. of cedilanid intravenously to begin rapid digitilization. At 9:00 A.M., she stated that she felt somewhat better althought her heart rate was still as rapid as it had been upon admission. Carotid pressure or pressure on the eyeballs did not affect the heart rate. Forced vomiting by irritating the throat and forced-held inspiration also had no effect on the heart rate. She was given a second dose of 4.0 c.c. cedilanid. A second electrocardiogram at 9:20 A.M. showed a tachycardia over 200 per minute and some ST depression. At 10:00 A.M., the patient suddenly stiffened in bed and developed a marked opisthotonus. She suddenly became cyanotic. Respirations became very slow. Artificial respiration was instituted and oxygen was given. She failed to respond and died at 10:02 A.M., on August 21, 1946.

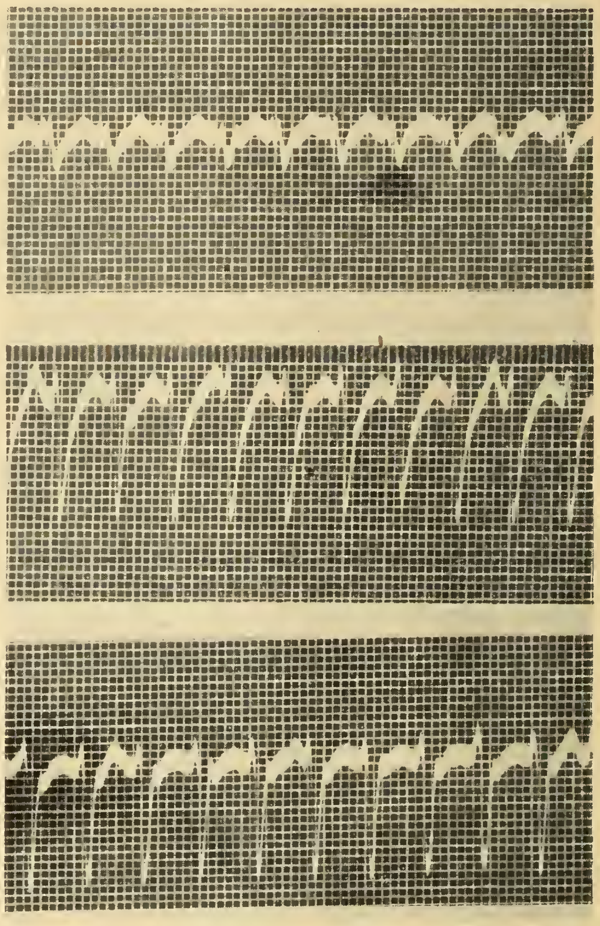

Fig. 1. Electrocardiogram showing marked tachycardia.

Dr. Donald H. Peterson: X-ray films of her chest do not contribute much. The heart appears normal in size with nothing unusual about the contours of the cardiac silhouette. The pulmonary markings are indistinct because the patient moved somewhat at the time of exposure.

Dr. Hertzog: I think we should have a discussion of this case before we give the autopsy findings. Does any one wish to ask any questions or make a diagnosis?

From the Minneapolis General Hospital, A. J. Hertzog, M.D., pathologist.

Intern: She was confined to bed in May of this year with a tachycardia and swelling of her legs. I would guess that she had acute rheumatic heart disease with an endocarditis and possibly a myocarditis.

Dr. Hayford: The story that we were able to gather from her and her family made a very poor one for rheumatic fever in May. We were not impressed.

Student: How long can a severe tachycardia persist without resulting in heart failure?

Dr. Herman Koschnitzke: In general, a tachycardia of 240 or more if continuous for five days or longer becomes incompatible with life. Such a tachycardia reduces the blood flow through the coronary arteries by reducing the diastolic interval. Systolic contractions occur so fast that the heart is not properly filled with blood during diastole. This embarrasses the coronary circulation. Coronary sclerosis in older patients further reduces the margin of safety.

Student: Why was she given digitalis instead of quinidine?

Dr. Hayford: Cedilanid was given because the tachycardia was first thought to be supraventricular in origin. Further study of the electrocardiograms showed it to be ventricular in origin. Quinidine would then be the treatment of choice.

Student: Is it possible to have a ventricular tachycardia as severe as this without the presence of organic heart disease?

Dr. Hertzog: Occasionally, it may happen. However, we always think first of an anatomical basis for the tachycardia, particularly coronary sclerosis in older people. Dr. Sether will give the autopsy findings.

Autopsy

Dr. Julian Sether: The body was that of a small poorly nourished female weighing approximately 105 pounds. There was no peripheral edema or signs of congestive heart failure. The transverse cardiac diameter was 12 cm. as compared to a transverse thoracic diameter of 24 cm. The heart weighed only 270 grams. The epicardial surfaces were smooth. The left ventricular wall measured 1 cm. in thickness. The right ventricle appeared dilated and measured 0.4 cm. in thickness. The musculature of the heart was soft and flabby. The valves and chordae tendineae were normal. The circumferences of the valves were as follows: aortic 6 cm., pulmonic 6 cm., mitral 8 cm., and tricuspid 12 cm. There was no evidence of any endocarditis. The musculature of the left ventricular wall and interventricular septum contained irregular yellowish-grey patches measuring up to 3 cm. in size. They somewhat resembled areas of fatty metamorphosis. The right lung weighed 180 grams and the left, 160 grams. They appeared crepitant and were not edematous. The liver weighed 1,240 grams and appeared normal. The spleen, kidneys, gastrointestinal tract, and remaining organs appeared normal.

Dr. Hertzog: We had to wait for the microscopic sections of the heart muscle to be sure as to what we were dealing with in this case. I will show you on the screen a section of the myocardium. There is a very severe diffuse myocarditis. The myocardium is infiltrated with large numbers of mononuclear cells, eosinophiles, and clumps of neutrophiles. There is extensive degeneration of the muscle fibers. The large multinuclear giant cells you see represent degenerating muscle fibers (Fig. 2). Nothing resembling Aschoff nodules is seen. Sections of the valves showed no evidence of any endocarditis. The epicardium appeared normal. The pathology is hence essentially a severe diffuse idiopathic myocarditis. A gram stain was negative for bacteria. Sections of the remaining organs showed nothing of note except slight patchy atelectasis of the lungs and passive congestion of the liver.

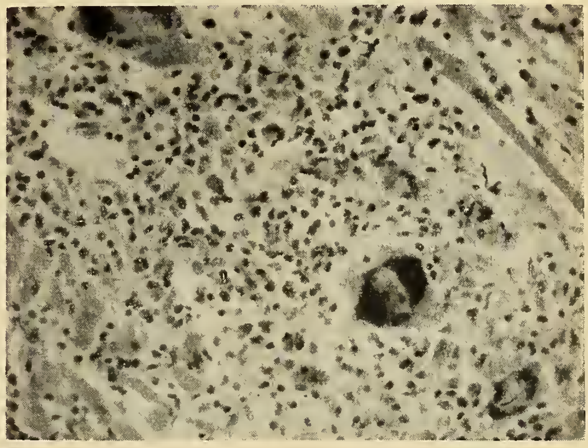

Fig. 2. Photomicrograph of myocardium showing severe diffuse inflammation and degenerating muscle fibers.

This case is then one of diffuse isolated acute myocarditis. We use the term isolated to mean that it is confined to the myocardium and there is no evidence of any disease in other parts of the heart or body. This type of heart disease is well recognized as Fiedler's myocarditis. It does not resemble a rheumatic myocarditis. However, I do not think we can completely eliminate rheumatic fever as an etiological factor from the histology. The reported cases of myocarditis due to sulfa sensitivity that I am familiar with have never shown any muscle degeneration such as one sees in this case. Furthermore we have no history of any sulfa therapy. Dr. Hayford will give us a short review of the literature of myocarditis with special reference to Fiedler's myocarditis.

Discussion

Dr. Hayford: The term, myocarditis, is one that has been badly abused. It should be limited to true inflammations of the myocardium. Many physicians in the past used the name loosely to describe myocardial exhaustion and changes in the myocardium secondary to coronary disease. It is hence difficult to evaluate the older reports on the incidence of myocarditis in autopsy material. One of the best reviews of the subject in recent years is that of Saphir.[8] Saphir classifies myocarditis as follows: fetal; specific, due to such diseases as rheumatic fever, tuberculosis, or syphilis, et cetera; myocarditis in infectious-disease with or without endocarditis; and isolated or Fiedler's myocarditis. He found 240 cases of myocarditis in 5,626 autopsies. This is an incidence of 4.26 per cent. In this series, there were fifteen cases listed as isolated or Fiedler's myocarditis. Dr. Clawson[1] found only one questionable case of the granulomatous type in his series of 6,283 hearts in the files of the pathology department of the University of Minnesota. Fiedler[4] in 1899 described the condition as follows: "There is an acute, rapidly occurring inflammation of the myocardium which most likely is due to micro-organisms. This same occurs, as a rule, in young people with or without fever. The pulse rate is markedly increased, and uncommonly decreased; the heart is dilated to the right and left; heart action is irregular; dyspnea, cyanosis, congestive phenomena in both greater and lesser circulation occur; and there is a marked tendency to cardiac weakness. The disease is localized mainly in the myocardium and causes there an interstitial myocarditis, the remaining organs being uninvolved or having only a secondary inflammation." Isolated myocarditis is commonly a disease of young people, the most common age period of reported cases being twenty to fifty years of age. The onset is often sudden, accompanied by a chill. Dyspnea, precordial distress, tachycardia, and weakness are common symptoms. Sudden death occurs frequently. A review of the literature shows that two distinct histological types have been described. One is characterized by the presence of granulomatous lesions and the other by a more diffuse type of inflammation. A form of myocarditis due to sulfonamide therapy has become well known to pathologists in the last three or four years. Such cases have been reported by Weller and French[9] and Lederer and Rosenblatt.[6] Most of these cases have been interstitial myocarditis with little or no muscle degeneration. Cases very similar to our case have been reported in the last few years by Coulter and Marcuse[2]; Mallory[7]; Hansmann and Schenken[5]; and Covey.[3] The disease known as isolated myocarditis probably has a variety of undiscovered causes.

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CONGENITAL URETHRAL VALVE

A Report of Two Cases

HAROLD H. JOFFE, M.D., W. E. HATCH, M.D., and ARTHUR H. WELLS, M.D.

Duluth, Minnesota

Dr. A. H. Wells: We wish to present two cases of urinary obstruction due to congenital valves in the prostatic urethra. They illustrate some of the difficult diagnostic features of this lesion found in widely separated age groups.

Dr. R. E. Nutting: This three-and-a-half-month-old white male infant was admitted on September 13, 1946, weighing 13 pounds 10 ounces. He had been adopted by his present parents at the age of six days, at which time he was apparently normal and healthy. The mother complained that for the past three or four weeks the infant had been having noisy and heavy breathing. I found him in apparent good health on August 17, 1946. However, since that time she noticed that her child had become rather pale. His diet was changed about one month prior because of some "digestive disturbance." On September 12, 1946, the evening before admission, the child vomited once and refused all food. The following day we found a hemoglobin of 50 per cent associated with rapid, heavy respirations, enlarged heart, possible palpable spleen, and an enlarged bladder. The infant was brought to the hospital for immediate transfusion.

In the hospital, a preliminary examination revealed rapid and heavy breathing associated with expiratory rasping but no evidence of any respiratory obstruction. There was a mass in the left upper quadrant, thought to be an enlarged spleen. The heart rate was 150 per minute and regular. The hemoglobin was 9.5 grams with a red blood cell count of 3,700,000, a white blood cell count of 13,600 and a normal differential count.

During the preliminary examination while in the oxygen tent, the child had a generalized convulsion associated with involuntary passage of stool and urine. He expired approximately three hours after admission without the blood transfusion.

Dr. A. H. Wells: This fairly well developed and nourished 3½-month-old white male infant was found to have a valve like fold of mucous membrane sweeping down from the verumontanum to the left and protruding into the prostatic urethra to a sufficient degree to almost

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From the Department of Pathology of St. Luke's Hospital, Duluth, Minnesota, Arthur H. Wells, M.D., Pathologist. Clerical assistance by Miss Faith Gugler.

completely obstruct this passageway (Fig. 1). There was a similar fold passing down from the verumontanum and swinging over to the left lateral wall. However, this structure was small in comparison and apparently played very little part in the obstruction. The prostatic urethra above the valve on the left was severely dilated and cone shaped. The urethral orifice gaped widely. The urinary bladder had severely hypertrophied and thickened walls. It contained approximately 50 c.c. of clear amber-colored fluid, and its fundus extended half way up between the symphysis pubis and the umbilicus. Its mucosal surface was rather severely trabeculated. The ureters were bilaterally severely dilated and tortuous. Both kidney pelvi had extreme dilatations, and there was severe atrophy of the parenchymal tissue of both kidneys. The kidneys weighed 30 and 32 grams respectively and measured approximately 3x3.5x6 cm. Their thin shell-like walls had no grossly normal appearing kidney tissue. The blood urea nitrogen was 214.4 mg. per cent and the creatinine 5.25 mg. per cent. Incidental findings were cardiac hypertrophy (60 grams) due primarily to hypertrophy of the left ventricle and mild dilatation of all cardiac cavities. There were toxic changes of moderate grade in the myocardium, liver, and spleen.

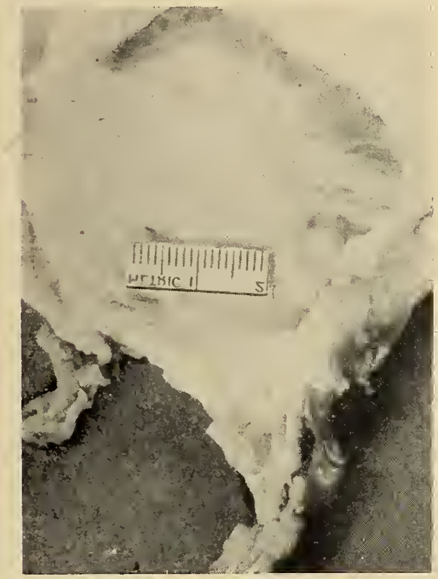

Fig. 1. Arrow points to curved shelf-like valve obstructing prostatic urethra. See dilated prostatic urethra, also dilated and trabeculated bladder.

Final diagnosis—Congenital urethral valves (a) dilatation of posterior urethra, (b) hypertrophy and dilatation of bladder, (c) bilateral hydroureter (severe), (d) bilateral hydronephrosis (severe), (e) uremia (immediate cause of death), (f) cardiac hypertrophy and dilatation of cavities, (g) toxic changes in myocardium, liver, and spleen.

Dr. W. E. Hatch: I wish to present the case of a young white man of twenty-one years who gave a history of persistent bed-wetting up until the age of sixteen, also the constant necessity of much straining with micturition and the observation of a gradual reduction in the size of an already small stream of urine. He had had a dull low backache for several years and for the past year had noticed an accentuation of this pain in the right flank. He was extremely nervous and apprehensive and had given up the idea of going to college. The effort necessary for micturition was quite noticeable. He had a residual of 60 c.c. of cloudy urine with 30 to 40 pus cells per high-power field. The urine had a normal specific gravity. There were 5,500,000 red blood cells, a hemoglobin of 17 grams, and 12,650 white blood cells.

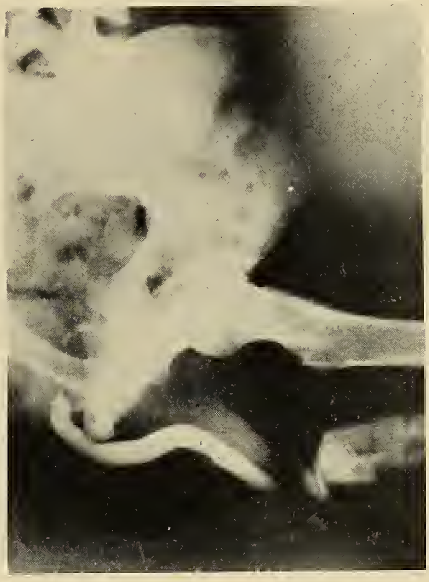

Fig. 2. Proximal urethra filled with opaque media revealing site of obstruction in posterior urethra.

The cystoscope was passed into the bladder only after overcoming considerable resistance in the posterior urethra, where much manipulation was necessary. Mild cystitis and early trabeculation was seen on the bladder mucosa. Many pus cells were found in specimens from both kidney pelvi. The pyelogram revealed a uniform moderate dilatation of the pelvis on the right side and a normal pelvis on the left. A urethrogram (Fig. 2) revealed a constriction in the posterior urethra. A thorough inspection of the urethra using the urethroscope and the McCarthy fore oblique cystoscope revealed congenital valves of the infra montanae type. There was only a mild congestion of the mucous membrane of the posterior urethra.

The congenital valves of the urethra were severed using the McCarthy resectoscope with the cutting current. An indwelling catheter with irrigation for a few days was the only postoperative treatment used.

The patient immediately noticed marked improvement in his freedom of urination. Various types of cystoscopes were passed at different times since the operation without meeting the former resistance and urethrograms failed to reveal the obstruction found in Figure 2. In six months he gained 26 pounds, his nervousness subsided, ambition and energy increased and he went to college. It is now almost ten years later and he has had no further difficulty with urination.

Discussion

Dr. H. H. Joffe: Counseller and Menville[2] reviewed eighty-four cases with congenital urethral valves and found that 75 per cent occurred before the age of ten and 52 per cent before the age of five. These figures closely parallel the age incidence of other reports.[10,14,18] The ratio of males to females is about 3:1.[15] Stevens[14] in 1936 found fourteen cases of obstruction of the female urethra by diaphragms or valves. There were approximately 130 cases reported in the literature up to 1945.[17]

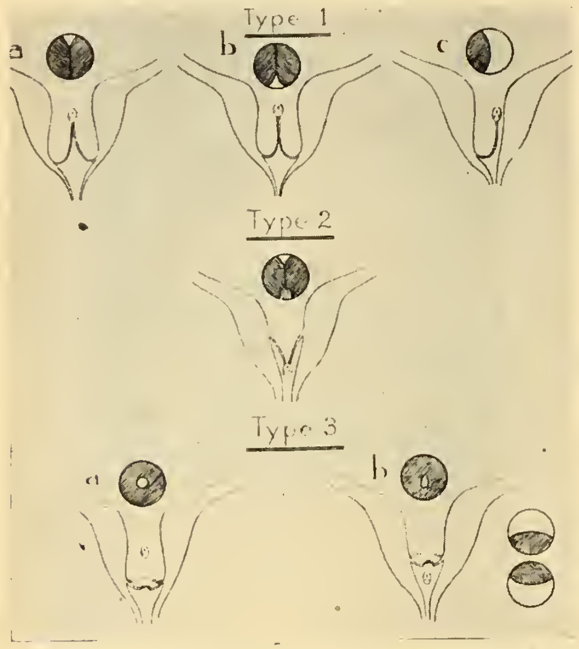

Fig. 3. Taken from Young and McKay.[18] Three types of congenital urethral obstruction.

Etiology

The early anatomists regarded the congenital valves as dilated lacunae, aberrant folds of mucosa or adherent fibrin masses.[10] At present there is no unanimity of opinion as to their formation. Many explanations of etiology have been advocated, none of which adequately explain all types of the valves. The following are some of the proposed theories:

1. Simple enlargement of normal prostatic urethral folds.[1,13]
2. Developmental anomaly of the Wolffian and Mullerian ducts.[4,6]
3. Anomalous attachment of the verumontanum to the roof of the posterior urethra.[10,13,16]
4. Persistence of the fetal urogenital membrane.[1,4,6,13]
5. Remnant arising from the fusion of the entoderm with the ectoderm.[17]

According to Watson[16] valves of the prostatic urethra may have their origin as early as the fourteenth week of fetal life and occur at the time of marked epithelial activity.

Davidsohn[3] reported a case of identical congenital valves in twins. The placenta and membranes were not properly examined, therefore the monozygotic or dizygotic nature of the twins were unknown.

Classification

The classification of Young[1,3,4,17] is the most widely accepted (Fig. 3). Here congenital valves of the posterior urethra are divided into three types, with type I being the most common.

Type I: A ridgelike fold extending distally from the verumontanum and dividing into two membranous sheets which are attached to the sides of the prostatic urethra (Fig. 3).

Type II: A similar ridge and folds as in Type I extending proximally towards the internal sphincter where they are attached to the urethra (Fig. 3).

Type III: A diaphragmatic fold, iris type, incomplete crescent or semicircular fold on either side of the urethra which may occur in any portion of the prostatic urethra with a small central or eccentric aperture (Fig. 3).

Pathological Anatomy

The results of obstruction to the flow of urine are those incident to any urethral obstruction[1] and the degree of pathology is proportional to the amount of obstruction.[17] An original hypertrophy of the bladder musculature and trigone may in time fail to overcome the resistance of the valves with a resultant dilatation and residual urine. Dilatation of the posterior urethra proximal to the valves, bilateral hydroureter and hydonephrosis usually follow with eventual death from uremia in untreated cases. The resultant urinary stasis predisposes to cystitis, ureteritis, pyelitis and pyelonephritis.

Symptoms

According to Whipple[17] over half of the 130 cases reported in the literature were not diagnosed during life, which emphasizes the fact that this entity is not as widely known as it should be. The symptoms are those produced by the local obstruction, secondary infection, and resultant uremia. The chief complaint is usually some disorder of urination such as pain, retention, incontinence, frequency, eneuresis, and dribbling. Difficulty in starting the stream and in voiding are among the early manifestations and may date back to birth.[2] Frequency even in the absence of infection is common in all except in the late stages because of the reduced elasticity and working capacity of the hypertrophied bladder.[10] Eneuresis may be the sole complaint and in a series of forty cases reviewed in the literature was reported in twenty-nine cases.[6] All were between the ages of five and fifteen. The symptoms of fretfulness, loss of weight or failure to gain weight, protuberant abdomen, secondary to a distended bladder, chills, fever, and pyuria of secondary infection and evidence of renal damage are of paramount importance. With extensive damage to the kidney, signs of renal insufficiency are manifested by low renal function, anemia, retention of nitrogenous products in the blood, gastrointestinal disturbances, such as nausea, vomiting and anorexia, also neurological symptoms, and finally lethargy and coma.[1,2,5,6,8,9,10,13,18] The fallacy that the bladder is always distended sufficiently to be seen or felt is shown in the series of Campbell[15] and Thompson.[15] A history of continuous difficulty in urination since birth is highly suggestive of congenital valvular obstruction of the posterior urethra.[13]

Diagnosis

Dr. W. E. Hatch: The following conditions should be considered in a differential diagnosis: vesical or urethral calculi, hypertrophied verumontanum, chronic pyelonephritis, congenital polycystic kidney, congenital strictures, new growths of the prostate or urethra, and cord bladder with paralysis and those associated with spina bifida.

It is of importance to keep in mind that valves while obstructing the flow of urine may offer no resistance to the passage of a sound into the bladder because the valves fall back against the side of the prostatic urethra during the passage only to return to their original obstructing position.

The most valuable diagnostic procedure is that of cystoscopy and endoscopy with a carefully prepared lateral x-ray view of the urethra filled with opaque media. There should be a characteristic dilatation of the bladder neck and posterior prostatic urethra above a constricting point. An excretory urogram may well indicate the degree of kidney and urethral damage. Bladder residual, urine cultures and blood chemical analyses help complete the study. Great care and a diminutive cystoscope are essential to the study of an infant bladder.

Treatment

Treatment is based on relief of urinary obstruction and the method of choice is transurethral resection.[1,2,11,13,15,18] There are advocates of perineal urethrotomy[11] and suprapubic[9,12] cystotomy approaches.

Special care must be exercised in handling the tiny delicate structures in infants. A slow decompression extending over two or more days is essential in the more severe cases at any age. A long period of urethral drainage of the bladder and chemotherapy may be advisable before an attempt at destroying the obstructing lesion. In cases with severe renal impairment the prognosis is poor, especially if urinary tract infection is well established.

Summary

Two cases of congenital valves obstructing the urethra have been reported. The one in a three-and-a-half-month-old infant was recognized only after it had led to death through uremia. The second patient, a twenty-one-year-old man, had congenital prostatic urethral valves which proved the basis of sixteen years of bed-wetting. He also noticed increasing difficulty with urination, small urinary stream, low backache, pain in the right flank, and psychologic disturbances. He was completely cured following transurethral resection of the valves.

A brief review of the literature concerning the etiology, classification, pathological anatomy, symptoms, diagnosis and treatment are included.

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Uses of Radon Ointment

(Continued from Page 53)

While the true value of radon ointment is not known and work with it is still experimental, sufficient promise has been shown to encourage continuance of this form of therapy.

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CASE REPORT

UNUSUALLY LARGE OVARIAN CYST IN AN ELDERLY WOMAN

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THE unusual size of the tumor, age of the patient, and the prolonged history are features which make this case of interest to the surgeon.

The patient, a white woman, was first seen by us when she was sixty-eight years of age. Her complaints were vertigo, fainting, and indefinite gastric distress. On physical examination she was found to have a moderate hypertention, and her abdomen was symmetrically distended and flat to percussion. The uterus was pushed down deeply into the pelvis, and both vaginal vaults were shortened and tense to palpation. A diagnosis was made of a cystic tumor arising in the pelvis and extending as high as the xiphoid process. The patient gave a history of having been examined fifteen years previously and told that she had an ovarian cyst about the size of a grapefruit. Since that time her abdomen had steadily enlarged, although her extremities and face became progressively thinner. No treatment had been instituted.

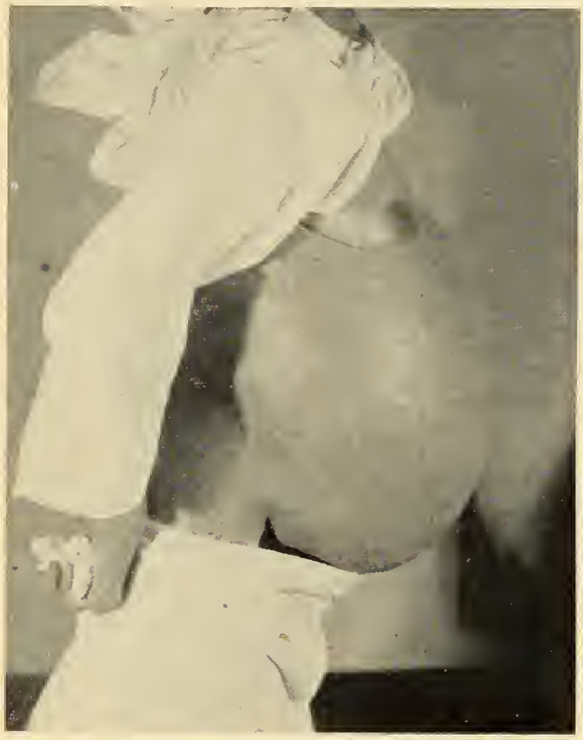

Fig. 1. Abdominal distention with patient erect.

We advised hospitalization but this was refused. She was, therefore, treated symptomatically at home. During the next three years the distention continued to increase and her symptoms became more severe. She developed a partial obstruction of the bowel, accompanied by pain, and finally consented to be hospitalized.

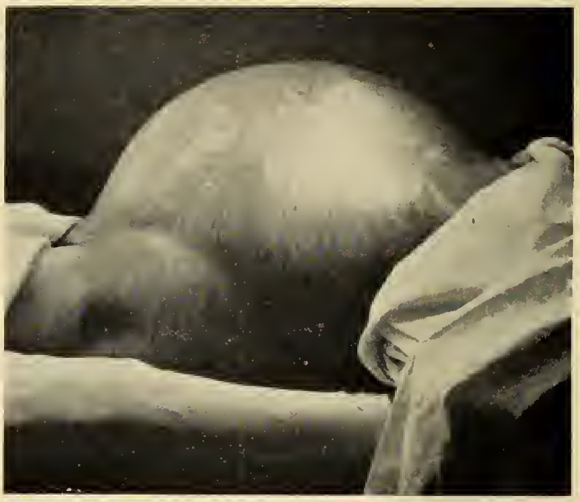

Fig. 2. Abdominal distention with patient lying down.

After a few days of preparatory treatment, the abdomen was opened under local anesthesia supplemented by nitrous oxide. A large cystic tumor was encountered filling the entire abdominal cavity from the pelvis to the diaphragm. The bowel was compressed and pushed into the lateral gutters. The tumor was tense and thick walled. A trochar was inserted and a large quantity of clear straw-colored fluid evacuated. There were multiple locules, many of which had to be drained before delivery of the cyst from the abdomen could be accomplished. A large pedicle attached to the right broad ligament was easily ligated and amputated. Immediately after closure of the abdomen, a large turkish towel was folded and strapped tightly over the dressing to compress the abdomen. The four extremities were wrapped with elastic bandages. Although she vomited some bloody fluid the first day, these measures proved successful in preventing a marked fall in blood pressure and the patient's convalescence was quite uneventful. She was discharged on the twenty-third hospital day.

The cyst, when refilled with water, weighed 42 pounds but due to the many small locules could not be distended to its full capacity. The pathological report was, "a multilocular cyst lined with a single layer of columnar epithelium. There is no evidence of gross or microscopic malignancy."

After two and a half months of freedom from symptoms, the patient again became suddenly ill with fever and vomiting. At this time she showed a weight gain of thirty-five pounds since her discharge from the hospital. Her symptoms subsided, but in a few days they recurred, accompanied by rapid abdominal distention, marked pyuria, and albuminuria. Gastrointestinal studies were negative except for a small herniation of the stomach into the esophageal hiatus of the diaphragm. A paracentesis was performed and nine liters of amber fluid obtained. The centrifuged specimen showed metastatic carcinoma cells.

One month later there was a return of the ascites, and we elected to do an exploratory laparotomy. A large amount of straw colored fluid was found, and the omentum and abdominal organs were studded with metastatic carcinomatous lesions.

Following operation, the patient failed rapidly and expired on the fourth postoperative day. The post-mortem findings were:

1. Metastatic carcinoma involving the serous surfaces of the abdominal organs and omentum.
2. Coronary sclerosis grade 4.
3. Pulmonary edema.
4. Thrombosis of the abdominal aorta and vena cava.
5. Fatty metamorphosis of the liver without carcinomatous involvement.
6. Cholelithiasis.

It was the pathologist's opinion that the primary lesion was probably small and passed unobserved in the original cyst, as none could be found at post-mortem examination.

Observations on a Mild Form of Epilepsy

(Continued from Page 51)

vulsive states of the military group were of a milder character. Grand mal convulsions were induced with the water-pitressin test in 23 per cent of those with the final diagnosis of epilepsy. This is less than one-half the percentage of positive tests in a previous group which also suggests a less severe grade of epilepsy in the present group.

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Rectal Impalement

(Continued from Page 46)

Discussion

The wisdom of closing the rectal tear in the primary operation might be questioned. This was done, however, to prevent extrusion of a loop of small gut; allowance was made for drainage into the rectum from the contaminated area. That this was adequate is evident from the prompt formation of a rectovesical fistula without apparent urinary diffusion into the perivesical tissues.

The triple nature of this injury merits some comment regarding anatomical variation of the rectovesical pouch of Douglas. Obviously, only a rather deep one would make it possible for the impaling agent to penetrate in a straight line, the rectum, peritoneal cavity and bladder, and such was found to be the case at operation.

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from December issue)

Henry C. Grover, of Irish descent, was born to American parents on March 26, 1830, on a farm in Union County, Indiana. His father, Josiah Grover, who successively was saddler, farmer and storekeeper, was a native of Kentucky; his mother was Sophia Everts Grover, daughter of Dr. Sylvanus Everts, of Indiana, originally of Vermont. Sophia Everts, as has been told, had six brothers, all of whom became physicians, so that it is not strange that of her six sons one should enter the medical profession. Of her sons, S. E. Grover and Daniel P. Grover made their homes in La Porte, Indiana; B. A. Grover lived in Missouri and S. K. Grover in Capolis, Washington. Oscar was killed in the Battle before Atlanta, Georgia, during the Civil War.

Henry Grover received his elementary education in the schools near his father's farm and he considered himself fortunate if he could attend classes three months in the year. At the age of sixteen, he left the farm to become the office boy of his grandfather, Dr. Sylvanus Everts; and predisposed as he was to study medicine, the months spent in a medical atmosphere fixed his determination to become a physician. In 1853 and 1854 he was a student at the Medical School of the University of Michigan; late in his course he transferred to the Medical School of the University of Keokuk (Iowa), of which his uncle, Dr. Orpheus Everts, was a trustee, and there he received his degree in medicine on February 22, 1855. In this same period a second uncle, Thomas Haywood Everts, likewise a student of medicine at the University of Michigan, also transferred to Keokuk, as has been told, and was graduated in 1855.

Dr. Grover's first period of medical practice, in Lake County, in northern Indiana, was terminated by the Civil War. When hostilities were declared, he enlisted as a private in the Twentieth Regiment of Indiana Volunteer Infantry and was mustered in at Lafayette, Indiana, on July 22, 1861. Six months later, on January 13, 1862, he was appointed assistant surgeon, and for the next three years he met the fortunes of war with his regiment, which not only helped to put down the Draft Riots of the week of July 13 to 16, 1863, in New York City, but was in twenty-two engagements, some of the hardest fought of the campaigns, among them the battle of Chickahominy, Hampden Roads, the Seven Days' Battle before Richmond, Chancellorsville, Gettysburg, Spotsylvania Court House, Petersburg and Appomatox Court House. Dr. Grover was continually at the front, ministering to the sick and wounded, and alleviating suffering; the gratitude and blessings of those whom he helped remained always one of his treasured memories. The kit of surgical instruments which he used in his military service he long afterward gave to Dr. R. V. Williams, of Rushford, and Dr. Williams in turn, on September 16, 1941, when he was host to friends and colleagues in the Olmsted-Houston-Fillmore-Dodge County Medical Society at a farewell dinner on his retirement from practice, presented the kit to the Mayo Clinic; it has been preserved in the medical teaching museum of the Clinic and the Mayo Foundation with other matters of interest pertaining to medical and surgical practice.

In 1864, on the expiration of his army service, Dr. Grover re-entered the Medical School of the University of Michigan for an additional year of study before returning to medical practice in Lake County. Early in 1869 he left Indiana for Minnesota, because of the excellent professional and financial opportunity that the community of Rushford, Fillmore County, afforded; his license to practice in the county was recorded on January 8 of that year. In Rushford he lived his long and useful life as a general practitioner, high in the esteem of his fellow citizens. For five years, from 1874 to 1880, he was in partnership with his uncle, Dr. Thomas H. Everts, who had settled in Rushford in 1866, an association which was broken only when Dr. Everts removed to Colorado to enter another profession.

Dr. Grover's personal worth and ability were recognized in appointments to various offices, civic and professional. He was mayor of Rushford and a member of the village council, each for three years. As a councilman he was instrumental in securing high license and in limiting the number of saloons in the village. Twice he was sent as representative of his district to the state legislature, between 1875 and 1877 and in 1879, and in his capacity as legislator he was a faithful worker for measures that would advance the effectiveness of medical practice.

In his professional capacity he served as chairman of the local board of health, as county physician, and as county coroner, first from January 8, 1873, to January 8, 1880, and in a later term from 1891 to 1892. It happened that during his first period of service as coroner, the discovery of the remains of two human bodies in a box which was anchored in a branch of the Brook Kedron, in Sumner Township, caused horrified excitement, and Dr. Grover of course was summoned. Fortunately, it proved that foul murder had not been done; the cadavers had been placed in the brook by an enthusiastic medical student to macerate that he might with a minimum of effort secure the skeletons for study.

From the beginning an exponent of medical organization, Dr. Grover was one of the early members of the Fillmore County Medical Society and he was serving as its vice president in 1879 when the society suspended activity, the officers to hold over to a more prosperous era. He was a member of the Winona County Medical Society also and when, in 1904, the Houston-Fillmore County Medical Society was formed, Dr. Grover, then seventy-four years old, became an honorary member at the insistence of his younger colleagues that his name appear on the roster. The proposal for membership was presented by Dr. De Costa Rhines, to whom, as to many others of his juniors in the profession, Dr. Grover was a kind and wise friend. A devoted friendship held in common was that of Dr. Grover and his fellow townsmen, Dr. J. W. Magelssen and Dr. H. W. Eldred, the well-known surgeon-dentist; these were a trio who by their loyalty to each other and by their humor and spontaneous wit delighted their friends and acquaintances.

In 1871 Dr. Grover became a member of the young Minnesota State Medical Society, and thereafter for many years he was active in its work. He and Dr. Everts, among the few physicians in Fillmore County who responded to requests from the organization, contributed valuable notes and reports for its transactions and both men served on various of its committees. Dr. Grover was at different times a member of the executive committee and of the groups considering medical jurisprudence, obstetrics and necrology. On November 14, 1883, under the law passed that year to regulate medical practice in the state, he received certificate No. 328 (R).

Dr. Grover did not use tobacco, was an enemy of alcoholic beverages. Although he was stern and straightforward in dealing with serious problems, he rarely expressed anger; he was kind and humorous, was fond of good stories and a contributor of many. He was a Mason and a member and supporter of the Unitarian Church. His absolute dependability and his zeal in promoting any enterprise that was for the good of his fellow men come first to the minds of those who knew him best.

Henry C. Grover was married to Sarah Jane Pratt, a school teacher who was born at Jamestown, New York. Dr. and Mrs. Grover had two children, Lucy, who died in childhood, and Fred H. Grover, a farmer, who by 1941 had retired and was living in Rushford. Dr. Grover, at the time of his death, from carcinoma, on July 4, 1910, was making his home with his son.

Thomas Edmund Hall, the son of Mr. and Mrs. Thomas Hall, among the earliest settlers of Fillmore County, was born at Preston in 1854 and spent all of his life, with the exception of the years when he was absent for study, within a hundred miles of his birthplace. Immediately after his graduation from Rush Medical College, in 1875, he began the practice of his profession in the village of Lanesboro. Although he remained only a short time then, he later spent many years there, and it is in that community that he has been remembered most clearly, perhaps especially for his keen interest in history and for his remarkable memory. One pioneer citizen of Lanesboro has been quoted as saying that Dr. Hall knew more about the Civil War than the men who fought in it; that he could read anything and recite it word for word the next minute. Another person, a veteran of the Civil War who had spent eighteen months in Libby Prison, was astonished to hear Dr. Hall, who had never seen the place, describe the exact spot where the veteran had been confined and the conditions that had existed in the prison.

Dr. Hall is said to have practiced medicine in several counties and many different towns in southern Minnesota and, although the order and exact time are not certain, trace has been discovered of various changes of residence. In 1875, in Fillmore County, he left Lanesboro for Preston and in the same year went from Preston to Brownsdale and Austin, both in Mower County. Shortly afterward he was for a time in Granada, Martin County, and not long after that was in Lake City, Wabasha County, and in Frontenac, Goodhue County. From 1878 into 1882 he was again in his native town of Preston and was co-operating actively with the Minnesota State Medical Society in obtaining data on the incidence and severity of diphtheria in Fillmore County. From Preston he moved in the summer of 1882 to Dresbach, Winona County. In the next period of three years, there were notes in the Preston newspapers about his activities and his practice and about visits to Preston by Dr. and Mrs. Hall and their little daughter. Then, in the summer of 1883 Mr. and Mrs. Thomas Hall, oldest citizens of Preston, moved permanently to Wilmington, Delaware. In this same period, under the act of 1883 to regulate medical practice. Dr. Hall received state certificate No. 781 (R).

Early in 1886 Dr. Hall settled once more in Lanesboro and through the nineties and into the new century he was listed in medical directories as practicing in that village. By 1909 he was in La Crescent, Houston County, and in the following year he crossed the Mississippi River to practice medicine and to make his home in La Crosse, Wisconsin. In La Crosse, on May 5, 1912, he died at the age of fifty-eight years. In 1941 his widow, Mrs. Rubie T. Hall, continued to live in La Crosse.

Florence John Halloran, born on October 3, 1859, at Chatfield, Minnesota, a village of both Fillmore and Olmsted Counties, was the son of Timothy Halloran and Catherine McGuire Halloran.

Timothy Halloran was one of the notable pioneer settlers of the two counties. He was the son of an Irish civil engineer, Florence Halloran, and was born near Bandon, County Cork, Ireland, on December 5, 1832. When he was twenty years old, he came to America, and after working for two and a half years in Massachusetts and for some months in Wisconsin, as he traveled west, he reached his goal of southern Minnesota in 1855 and at once pre-empted some land in Pleasant Valley, Mower County. Very soon, however, he transferred these acres to his brother, who had accompanied him, and returned to Chatfield, through which he had passed en route to Pleasant Valley. He lived in the village of Chatfield for five years and spent the remainder of his life on farms which he owned in Elmira Township in Olmsted County. In 1858 he was married to Catherine McGuire, of Chatfield, also a native of Ireland, who had come with her parents in the early fifties to southern Minnesota. By unflagging hard work, the young couple overcame the hardships and financial stress of pioneer life and won through to comfortable prosperity. Their children, like themselves, were good citizens: Michael D., a lawyer in Rochester, Minnesota, for many years until his death; Timothy, also deceased, of Duluth; Nora (Mrs. John R. Manahan), of Chatfield, and Florence John, for forty-seven years a practicing physician. In 1897 Timothy Halloran, senior, wrote from memory his *History of Chatfield,* often mentioned in these pages.

Florence John Halloran received his early education in the public schools of Chatfield and his premedical training at the Campion Jesuit High School at Prairie du Chien, Wisconsin. After his graduation from that school, in 1884, he taught school for a time before beginning his course at Rush Medical College; the *Chatfield Democrat* of October 3, 1885, stated that Florence Halloran, "for the past two years a medical student under Dr. M. A. Trow," had left that week for "a course of lectures at Rush Medical." On February 21, 1888, he took his degree of doctor of medicine from Rush and shortly afterward began his medical career in Forman, Sargent County, Dakota Territory (North Dakota), where he practiced for about a year before settling in Chatfield. In the same year he was married to Nellie Tracy, a school teacher, daughter of Mr. and Mrs. J. Tracy, highly respected pioneer settlers of Laird, Eyota Township, Olmsted County. Dr. and Mrs. Halloran had one son, Walter H. Halloran, who became a physician.

From 1903 to 1912, Dr. Halloran practiced medicine in Saint Paul, devoting himself to the treatment of diseases of the heart and the stomach. During this period, he became a member of the Ramsey County Medical Society and was on the staffs of the Lutheran Hospital and the Bethesda Hospital.

With the exception of a short period in Winona in the autumn of 1894 and the years in Dakota and Saint Paul, Dr. Halloran spent his entire professional life in Chatfield as a general practitioner. Tall and large, of fine appearance, kind, genial and witty and, moreover, a competent physician and skilled diagnostician, an omnivorous reader of the medical literature, Dr. Halloran played an important part in the life of the village and the community. He had an extensive practice, served as local health officer, as medical examiner for the local draft board in World War I, and for many years as mayor of Chatfield. He was enrolled in the local county medical society, the Southern Minnesota Medical Association, the Minnesota State Medical Association and the American Medical Association; he was a member of the Knights of Columbus and a faithful and active member of the Catholic Church. In the years prior to 1900, his chief medical contemporaries in Chatfield were John C. Dickson, Charles McH. Cooper, Aaron M. Stephens and Milton A. Trow.

That Dr. Halloran was a strong and vivid personality is clear. Recollections of his kindly wit and especially of his generosity to the sick poor are many. If fault or foible is mentioned, it is with affectionate tolerance.

In the last years of his life Dr. Halloran spent part of his time in Jackson, Minnesota, with his son, Dr. Walter H. Halloran, who owns and operates the Halloran Hospital, and after the death of Mrs. Halloran, on August 17, 1934, he moved permanently to Jackson. He died at the home of his son on January 23, 1935.

In paying final tribute to Dr. Halloran, the editor of the *Jackson County Pilot* wrote of him as one of the oldest and most prominent practicing physicians in southern Minnesota, loved by all with whom he came in contact, both for his skill and for the "pleasing geniality which always pervaded any company that he entered." And to this comment is added that of the son, who described his father as "a general practitioner of the old school, who kept abreast of the times and gave his services freely and willingly to his people, regardless of personal agrandizement."

"**Dr. Hammer,**" announced the *Chatfield Democrat* on November 3, 1883, "will sell his stock and farming implements at public auction on November 15, at his old place near Pilot Mound." This is the only mention of this practitioner in Fillmore County that the writer has seen.

Possibly the same man, a Dr. Amos G. Hammer, graduate of the Physio-Eclectic Medical College in 1867, was listed in the official state register of physicians of 1883-1890 as a resident of Redwood Falls, Redwood County, and the possessor of state certificate No. 297 (E) dated on November 10, 1883.

"**Hammond, Thos.**" was listed among the patrons of an illustrated historical atlas of Minnesota of 1874 as a physician and surgeon of section 31, Elmira Township, Olmsted County, post office Chatfield, a native of Adams County, Pennsylvania, who came to Minnesota in 1864. There is reason to believe that this was the Dr. H. Thomas who lived in Chatfield for about fifteen years and actively practiced medicine there into the eighties. A few notes on Dr. Thomas follow in alphabetic place in the present series of sketches.

Henry Howard Haskin (a final "s" was added subsequently to the surname) was born at Middlesex, Vermont, on September 10, 1844, and was one of the five children of Samuel Haskin and Polly Almira Haskin. His brothers and sisters were George, Dustin, Emmaline and Lois. Dustin died in infancy. Of the others, in later years George lived in Cushing, Oklahoma; Emmaline (Mrs. Blandin), in Minneapolis, Minnesota; and Lois (Mrs. Webster Hills) in Downers Grove, Illinois. The father, Samuel Haskin, who claimed direct descent from a passenger on the Mayflower, was a farmer and miller.

When Henry was seven years old, his parents moved west with their family to a homestead near Prairie du Sac, Columbia County, Wisconsin. There the boy grew up, attending the rural school until at the beginning of the Civil War he volunteered for service in the Union Army and was accepted. For a short time he was a fifer, but when it was discovered that he wrote a clear, legible hand he was chosen as clerk to the post adjutant at Benton Barracks, St. Louis, Missouri, and in this office he remained until he received his honorable discharge in 1865.

About three years later the Haskin family moved into southern Minnesota and settled near Granger, in Bristol Township, Fillmore County, near the Iowa line. In the winter of 1868 and 1869, Henry Haskin taught school in the village of Harmony, in the bordering township of that name on the east, and for the next three years he traveled for the Winneshiek Paper Mill Company.

On October 10, 1873, Henry Howard Haskin was married to Mary W. Adams, a school teacher of English descent, who was a native of Brandon, Vermont. To them were born two children, Leon Leroy and Ethel Leona. At this period of his life Mr. Haskin was studying law in the office of an attorney, a pursuit which he discontinued after a few months to undertake the study of medicine at the Medical School of the University of Iowa, from which he was graduated on March 7, 1877, as a doctor of medicine.

Dr. Haskin at once began to follow his profession at Kendalville, Iowa, but soon moved to Elliota, Minnesota, which was three miles from the present village, then nonexistent, of Canton. When Elliota became one of the disappointed villages of the county by reason of being left to one side by the railroad, the commercial and professional interests were moved to Boomer, which later received the name of Canton. It probably was early in his years as a physician that Dr. Haskin added or, rather, accepted a final "s" on his surname and became Dr. Haskins. As he said, everybody else put the "s" on and therefore he did also.

In Canton from 1878 for the ensuing twenty-four years, Dr. Haskins was a general practitioner of medicine and surgery and, on occasion, dentistry. A trained pharmacist as well, he owned and operated one of the two drugstores of the village; Dr. Robert A. Sturgeon, a pioneer physician in the county since 1865, who also had removed from Elliota to Canton, owned the second. Dr. Haskins enlarged his interests by conducting with S. Manual, a general store across the street from his drugstore. During these busy years Dr. Haskins served his community well, kept abreast of advances in his profession, reading the literature, taking postgraduate work at Northwestern University and joining in the work of medical associations, among them the local county medical society, the Southern Minnesota Medical Association and the Minnesota Valley Society (the latter two groups merged in 1911, taking the name "The Southern Minnesota Medical Association"), and the

Minnesota State Medical Society. On October 11, 1883, under the new Medical Practice Act, Dr. Haskins received state certificate No. 50 (R). From January 4, 1887, to January 6, 1889, he served as county coroner.

In the years from 1878 to 1887, Dr. James M. Wheat, of Lenora, in Canton Township, one of the county's earliest and most able pioneer physicians, frequently called Dr. Haskins in consultation, and in a published report of a "case of intrauterine fibroid tumor and operation" which he made to the Committee on Gynecology of the State Medical Society credited Dr. Haskins with assistance in carrying out the surgical procedure. Dr. Wheat moved to California in 1887.

As a country physician with a heavy practice, Dr. Haskins had varied experiences, some amusing, some touching or hazardous, all interesting. His daughter, Ethel Haskins Gifford, has recalled the frequent sight, early in the morning, of her father's begrimed buggy, each spoke and hub laden with mud, silent witness to the long tiresome trips in the rain and darkness. A lantern on the dashboard was the only light; side curtains and a rainproof lap cover were the only protection against the weather. Sometimes the doctor used his two-wheeled, spring-equipped cart and then was accompanied by his shaggy little black and white dog Trax, who sat beside him, watching the road eagerly. . . . One morning at three o'clock Dr. Haskins was called on to perform an emergency operation, for strangulated hernia, on a citizen of Canton; the procedure was carried out successfully, the patient on the dining-room table, in the light of an oil lamp which was held by his brother; the patient made a good recovery and lived for forty years. Another time, Dr. Haskins filled a tooth for the brother, melting a gold coin and pouring the molten metal into the cavity. The patient withstood the operation without benefit of anesthesia and carried the filling with him to his grave when he died in his eighties. . . . A favorite story was that of the little Norwegian boy who walked in from the country to have his tonsils removed, replying to the astonished physician's question that he had come alone; and after the operation he walked home alone, "a true Nordic scout."

Possessor of a brilliant mind and a keen wit, Dr. Haskins enjoyed lively arguments, in which he was not always even-tempered. His pet diversions were chess and checkers, and he took great satisfaction in having won high score in the checkers club to which he belonged. The trophy, a belt which the winner retained until defeated, was too tight for Dr. Haskins, who was inclined to portliness, and he accordingly carried it in his pocket and proudly displayed it on request. Persistency in any task he set himself was an outstanding characteristic that is recalled by old friends; he taught himself the Norwegian language and he learned to ride a bicycle, in spite of memorable mishaps.

Mrs. Haskins was an accomplished woman, intelligent and public-spirited. She was active in organizing the Women's Christian Temperance Union in Canton and in securing free textbooks for the schools—bold undertakings, unbecoming a woman it was thought by the scandalized older women of the community, who nevertheless greatly admired Mrs. Haskins. One woman, who had heard Mrs. Potter Palmer speak as hostess at the Chicago World's Fair in 1893, said that she much preferred to hear Mary Haskins.

Although he was not a member, Dr. Haskins attended the Presbyterian Church of Canton and sang in the choir. Later in his life he became much interested in spiritualistic associations. He was a Mason, member of the local Blue Lodge, of which he was several times Worshipful Master; of the Royal Arch Masons and the Order of the Eastern Star.

On Christmas night, 1899, Dr. Haskins' drug store burned; it was not rebuilt and, in 1902, retiring from medical practice, the doctor left Canton for Perth, North Dakota, where with his son he engaged in farming and in operating a general store. In 1919, having previously spent several winters in Florida, he moved permanently to that state, to Southern Cassadaga Camp, where he spent the remainder of his life. He died from influenza, complicated by uremia, on May 9, 1922, survived by his wife, Mary W. Haskins; his son, Leon Leroy Haskins, of Warren, Minnesota; his daughter, Ethel Haskins (Mrs. E. B.) Gifford, of De Land, Florida; his sister, Lois Haskins (Mrs. Webster) Hills, of Downers Grove, Illinois; and his brother, George Haskins, of Cushing, Oklahoma. Of this group, all were living in 1943 except Mrs. Haskins and George Haskins.

William Haslam was a homeopathic physician, apparently in good standing among his colleagues in homeopathic associations, who settled in Chatfield in 1869. According to Halloran's history of Chatfield, Dr. Haslam opened a drug store in the village in partnership with W. R. Edward; mention was made of Mr. Edward selling the store to John S. Gove and Mr. Gove to J. A. Ross, but further comment on Dr. Haslam was lacking. Only one other note has appeared, and that in the *Rochester Post* of October 4, 1878: "Dr. Haslam, an old philosopher well remembered in Chatfield, used to have one weather sign that he regarded as never failing, to wit: That the direction from which the wind blew when the sun was crossing the equator indicated the direction from which it would prevail for the next six months. . . ."

(To be continued in February issue)

Louis A. Buie, M.D., President
Minnesota State Medical Association

President's Letter

PHYSICIANS OF TODAY REJECT "PEACEFUL MEDIOCRITY" OF PAST

IN past years, an immense majority of physicians remained intellectually in a middle state. They were not inefficient, but neither did they attempt to carry their activities beyond acceptable performance of their duties as practitioners of medicine. They were content to amble on in peaceful mediocrity, adopting with little concern the current opinions of the day. They merely maintained themselves on a level with their generation and conformed to the standards of knowledge common to the age and the country in which they dwelt.

The physician of today is not like that. He knows that a passive attitude will not be effective under present conditions. He knows that he must not limit his thought and activities to purely professional duties. He knows that the welfare of the people, his patients, is menaced by zealots who are so little conscious of their deficiencies that not only are they willing to attempt impossible tasks, but they actually believe they are capable of accomplishing those tasks. He realizes that these men, perched on their imaginary eminence, have become so inflated by their fancied superiority that they attempt to teach and to manage that which they themselves do not comprehend. He knows that those who are prey to such delusions, if they also acquire the power to enforce them, will accomplish far more evil than good.

He is willing to tolerate temporary schemes which have been considered necessary in a confused period of the world's history. He has co-operated in the advancement of such activities and is willing to continue to do so in spite of inconvenience and injustice to him. He knows why these deficiencies exist. The hospital problem, the nursing problem, the office and housing problem (probably he is a former medical officer returned to civil life), the EMIC* problem and the bluebook, the prepayment insurance program, the service plan, the indemnity plan, the situation regarding hospitals and certification, the specialty boards, the Rich report and the reorganization of the American Medical Association, the meeting in Two Harbors, Jim Murray, Bob Wagner, John Dingell, Claude Pepper—yes, all of these obstructing problems, conditions and individuals, and more, are understood by him. And he complains. That is a prerogative of the citizen in a free society. Had his forebears not possessed this characteristic, probably the Declaration of Independence never would have been written. Certainly he complains. He gets together with a group of general practitioners and they speak their minds. He organizes the American College of Physicians and Surgeons in an attempt to "do something about it."

Despite unfavorable conditions that surround him, he performs his task sedulously. He understands that for him to be possessed of knowledge concerning how to fulfill his duties allows him to meet the intellectual obligations of his task and that if he is determined to do these duties in spite of all inhibitors, he will meet the moral obligations of it. He understands that these are the two most important items in his armamentarium and that only if he maintains them at peak efficiency and in harmonious relationship can he hope to contribute to the objectives of his profession. He realizes that the success or failure of American medicine rests squarely on his shoulders. He knows that the security and durability of the organization of which he is a part depend on him.

Consequently, as I assume my new duties, I feel neither uncertainty nor uneasiness. Members of the Minnesota State Medical Association are well informed. The central office of the Association is efficient. Together we can combat any man-made threats against the public health.

Louis A. Buie

President, Minnesota State Medical Association

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*Emergency Maternal and Infant Care.

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

MINNESOTA MEDICAL SERVICE

A DETAILED report of the meeting of the House of Delegates of the Minnesota State Medical Association, held in Saint Paul on December 22, 1946, to take action on the report of its Committee on Minnesota Medical Service, appears in the section on Medical Economics in this issue.

Although the last legislature passed an enabling act authorizing the organized profession of the state to establish a nonprofit medical service to meet the need of insurance coverage for medical fees, Minnesota Medical Service has not as yet been incorporated. It is not surprising that in such an involved project, progress has been slow.

The committee and its subcommittees have had a multitude of meetings and have given much thought to the subject. The findings were submitted to the House of Delegates at its December 22 meeting. The committee submitted two contracts—one providing for surgical benefits alone and the other for combined medical and surgical benefits—and the rates which would be required. Dr. Adson, chairman of the committee, then brought out the fact that commercial insurance companies now have available indemnity policies providing benefits equal to and, in some instances, greater than those proposed by Minnesota Medical Service, at considerably less cost. The established insurance companies with 3,000 agencies throughout the state are potential handlers of these medical policies and can obviously undersell a small organization. Insurance of any kind does not sell itself, and the cost of selling is a large item in the insurance business.

It is not generally known that medical insurance policies, providing benefits identical with those proposed for Minnesota Medical Service, are already being offered and sold by the commercial insurance companies, for both groups and individuals, at a very reasonable cost.

It was felt by the House of Delegates that physicians should do everything in their power to promote the sale of these medical insurance policies offered by the commercial companies. The House approved the appointment of a committee of five physicians to publicize the availability of such policies and to give the approval of the Minnesota State Medical Association to worthy policies.

The House of Delegates, notwithstanding developments, decided to proceed with the incorporation of Minnesota Medical Service. Under its plan, indemnity policies are sold to any wage earner irrespective of his or her income. The policyholder pays the difference when the physician's fee is greater than that allowed by the policy. The policy of the Minnesota Medical Service, however, will provide for fees applicable to individuals earning $1,200 or less a year and to married persons earning $2,000 or less, and will provide complete coverage of physicians' fees for this group, which today is a small one.

Insurance against hospital costs and physicians' fees is the answer to the unequal cost of sickness, and physicians can render their patients a real service by urging them to take advantage of these policies. A list of commercial policies approved by the Minnesota State Medical Association will doubtless be forthcoming in the near future.

MORTALITY IN DIABETES

THE incongruous fact that the mortality in diabetes has been higher since insulin was discovered has been generally known. The explanation is made clear in a recent *Bulletin of the Metropolitan Life Insurance Company.*†

There are today twice as many known diabetics as there were twenty-five years ago when insulin was discovered. This probably means an actual increase in the disease itself, although the greatly increased number of physical examinations that include urinalyses undoubtedly accounts largely for this fact. The rise in the percentage of the population in the older age groups, a time when diabetes is most likely to make its apparance, also accounts for the increase in the disease.

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† A Quarter Century of Insulin. Bull. Metropolitan Life Insurance Company, 27:8, (Oct.) 1946.

Of course, it is well known that insulin has resulted in a marked reduction in mortality among diabetics, especially among those in the younger age group. While it has resulted in a prolongation of life, diabetics can hardly live forever, and the marked increase in deaths in diabetics over the age of fifty-five is the reason for the rise in the total mortality. As a matter of fact, the death rate among diabetics, according to the article mentioned, has been markedly reduced in each decade up to the age of fifty-five. An increase is slightly apparent in men in the decade from fifty-five to sixty-four, is more evident in women in this age group, and then, in the decade from sixty-five to seventy-four, the mortality becomes more than double that of the preceding decade in both men and women.

The survey mentioned covers only the general mortality among diabetics. What role the diabetes played as a cause of death doubtless cannot be accurately determined—that is, how many died *with* diabetes and how many died *from* the disease. However, the analysis indicates, rather than detracts from, the great value of insulin in the treatment of diabetes.

HEART DISEASE

The Metropolitan Life Insurance Company, in cooperation with the American Heart Society, is conducting an educational campaign on heart care. The purpose of the campaign is to prevent heart disease and to help people with heart disease to live longer and more useful lives.

During the campaign, one and one-half million booklets entitled "Your Heart" will be distributed to the laity, and a packet containing statistical information will be sent to 43,000 physicians. Other means, such as newspapers, radio, health departments and certain civic groups, will also be utilized in disseminating information about the heart and heart disease.

The campaign will coincide with the initial activity of the Life Insurance Medical Research Fund recently established by 148 life insurance companies in the United States and Canada. This fund will make available over $500,000 yearly for long-term research programs. Grants are being made to medical schools and other research institutions for heart studies.

The booklet, "Your Heart," gives information about the heart and heart disease suitable for an intelligent layman. The statistics in the packet being sent to physicians are presented in the following excerpt from an article entitled "Encouraging Trends in Heart Disease," which appeared in the *Statistical Bulletin* recently published by the Metropolitan Life Insurance Company.

Encouraging Trends in Heart Disease

Measured in terms of sheer numbers of persons affected, heart disease is our most important medical and public health problem. There are today about four million people in the United States who have some form of heart disease, and the number of cases is steadily increasing. Heart disease ranks first in the list of causes of death. It is not surprising, therefore, that there is a widespread impression that the situation with regard to the disease is critical, that the outlook for the patient with heart disease is poor, and that the conditions of modern life are largely to blame. Actually, the situation is much better than appears on the surface, and these current gloomy beliefs about the disease are not warranted by the facts.

It is true that the crude death rate from heart disease has shown a steady increase over the years. The major part of this increase, however, simply reflects the rapidly increasing proportion of older persons in our population. In the past seventeen years, among the millions of persons insured in the Metropolitan's Industrial Department, there has been an almost uninterrupted rise in the crude death rate from the disease, reaching a maximum in 1943, with a total increase of nearly 60 per cent since 1928. As against this large increase, the rate corrected for changes in the age, sex, and color composition of the insured shows a rise of only 12 per cent from 1928 to the maximum in 1943, and the 1945 rate is only 4 per cent above that for the year 1928.

Aside from the aging of the population, there are other factors of importance that have brought about an increase in the *recorded* death rate from heart disease. Unfortunately, it is not possible to "correct" the rate to allow for their effect. Increasingly many deaths, formerly reported as from nephritis or from cerebral hemorrhage, have been more recently ascribed to heart disease because of the changing medical concept regarding the relationship of high blood pressure to these conditions. For, the present concept is that the heart in most such cases is the organ primarily affected by increased blood pressure. Also, as a result of the more accurate determination of the cause of edema (dropsy), a frequent late complication in both heart and kidney disease, many cases with dropsy are now recognized as due to heart failure which formerly would have been ascribed to renal disease.

* * *

Without any allowance for the factors indicated above, there has been a definite reduction in heart disease mortality up to age forty-five. At ages one to twenty-four years, this death rate in recent years among the insured white males has fallen about 60 per cent as compared with 1911-1915. Among young white females the reduction is even larger. At ages twenty-five to forty-four also their death rates have in recent years been lower than at any time since 1911. Among white males twenty-five to forty-four years old, the death rate has been stable for ten years, but the recent level of the rate is well below that for 1911-1915. These declines at ages under forty-five are due chiefly to the decline in the mortality from rheumatic heart disease.

As regards the diseases of the coronary arteries, which account now for a large proportion of deaths ascribed to heart disease, the rapid increase in the mortality from these conditions represents almost entirely the changing diagnostic concepts in heart disease that are reflected in medical terminology. It is noteworthy that, as the mortality from coronary thrombosis and occlusion has gone up, the death rate from myocardial diseases has fallen.

The outlook in various types of heart disease has been shown in recent studies by the Company and by a number of physicians to be much better than has previously been realized. It is found, for example, that a considerable proportion of patients who have suffered an attack of coronary occlusion are still living ten years after the initial attack, and that many of these people are re-

(Continued on Page 102)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

DUAL APPROACH SPEEDS PREPAYMENT MEDICAL CARE PROGRAM

A dual approach, the result of months of careful study by a committee appointed two years ago by the House of Delegates, will provide a comprehensive prepayment medical care program for Minnesota within a short time.

This decision was made at a meeting of the House of Delegates of the Minnesota State Medical Association held Sunday, December 22, in Saint Paul. The delegates voted first to authorize the establishment by the Minnesota State Medical Association of a nonprofit corporation, to be known as Minnesota Medical Service; and second, to invite and encourage reliable insurance companies to sell indemnity contracts which offer health, sickness and accident policies that meet definite minimum standards of services and benefits set up by a newly appointed liaison committee of the state association.

It was felt that the undertaking was too large for any one organization to handle if speedy and broad health and sickness protection were to be assured Minnesota citizens, and for that reason the delegates voted to utilize not only the facilities Blue Cross could offer, but also those of established insurance companies whose enthusiastic co-operation is an established fact.

This decision on the part of the delegates might well be spoken of as the "Minnesota Plan" for while it will use different vehicles, there is but a single over-all objective, and that is to offer to the people of Minnesota as quickly as possible a program for budgeted medical care with a broad base and a comprehensive scope, to be sold in packets that will fit the needs of the employe and the employer, and at the same time be acceptable to Minnesota physicians.

Minnesota Medical Service to Begin Shortly

Minnesota Medical Service, a nonprofit corporation created by the medical profession of Minnesota, will come into being shortly when the Articles of Incorporation have been filed with the Secretary of State. The House of Delegates authorized the Council to appoint two physicians from each councilor district, who, in turn, will select three at large, for a total of twenty-one physicians, to serve as incorporators in accordance with the Enabling Act passed two years ago. On this body will fall the responsibility of selecting the first Board of Directors of the new corporation from which its first officers will be chosen. Of primary importance will be the selection, as soon as possible, of an experienced and capable director on whose council the incorporators and later, the Board of Directors, can rely during the corporation's early crucial period.

Subscriptions from Minnesota physicians toward the corporate fund went over the $100,000 mark set by the House of Delegates in May. However, it is not clear that all of the subscriptions which were pledged at the time the Organization Committee was considering recommending an indemnity contract for Minnesota Medical Service, strongly favored by some of the county medical societies, will be honored. For that reason, a recommendation was voted by the House of Delegates to empower the Council to stipulate that the capital fund may be $50,000, or a comparable amount, if that appears expedient, instead of the $100,000 previously specified.

Organizing Committee Presents Final Report

Dr. B. J. Branton, who was chosen as general chairman to head up the work of the Committee on Organization for Minnesota Medical Service, gave a complete report to the House of all the work which his committee had done since its creation. Included in this report were preliminary drafts of the Articles of Incorporation, the proposed agreement with the Minnesota Hospital Service Association which will handle sales promotion, collection of premiums and certain bookkeeping procedures, the two contracts proposed and the schedule of benefits. It was the Committee's recommendation that the final draft of the agreement with Blue Cross as well as the contracts proposed be left until such time as a director had been selected.

The proposed Surgical Contract provides benefits for surgical procedures up to $150 and includes maternity benefits after the contract has been in force nine consecutive months. Service in full to the extent of the benefits under the contract is proposed for the single subscriber whose net income is $1,200 a year or less; and for the subscriber with one or more dependents whose net income is $2,000 a year or less. For subscribers whose income exceeds these amounts, the benefits provided under the contract shall be regarded as partial payments toward the physicians' fees. The monthly charge for a single person has been set at $.85; for a subscriber and one dependent, $1.60; and for a subscriber and two or more dependents, $2.50.

The medical-surgical contract proposed is identical to the surgical contract except that it contains a section providing the following benefits up to a total of $100 a year for the subscriber: $2 per call, beginning with the first call, for medical care in the hospital; $3 per call, beginning with the third call, for medical care in the home; and $2 per call, beginning with the third call, for medical service in the office. Dependents of the subscriber are allowed up to $60 a year at $2 a call, beginning with the third call, for medical care rendered in a hospital. The monthly charge in the case of the medical-surgical contract for the single subscriber has been set at $1.45; for the subscriber and one dependent, $2.60; and for the subscriber and two or more dependents, $4.

To give a supplemental report of the Committee's work, Dr. Branton asked that Dr. A. W. Adson, chairman of a special committee appointed by the Council on December 1, be recognized. He concluded his report by recommending that, in view of the fact that the Committee on Organization had completed its work, it be dissolved. Action was then taken by the House for setting up by the Council of a board of twenty-one incorporators for Minnesota Medical Service.

Two Plans Proposed

Some of the members of the Organizing Committee, as their studies of various voluntary prepayment medical plans in the country have progressed, had come to the conclusion that Minnesota's program would proceed at an accelerated pace if not only the facilities which Blue Cross was willing to offer, but also those of insurance carriers, were utilized.

This was the gist of a report presented to the delegates by Dr. A. W. Adson.

Furthermore, Dr. Adson stated, the Organizing Committee was faced with two divergent viewpoints, both in its own ranks and among the profession at large. Several county medical societies had expressed the opinion in no uncertain terms that an indemnity plan would be more acceptable in their communities as it would relieve the physicians of the responsibility of determining the patient's income level, which is particularly difficult to establish among rural people. Another matter that had to be considered was that no clear-cut legal opinion was forthcoming as to whether Minnesota Medical Service could develop an indemnity program and come under the scope of the Enabling Act.

On the other hand, the committee recognized that within the committee itself, as well as among the profession, were staunch advocates for some type of service plan that would provide complete medical service to the extent of the benefits under the contract to subscribers within a certain income level.

It was to solve the problem of meeting both of these viewpoints among the profession, Dr. Adson said, that the Council at its meeting on December 1 appointed a special committee to explore the possibility of inviting reliable insurance companies to participate in the Minnesota program by writing indemnity contracts which would meet certain minimum standards in services and benefits.

Committee Seeks Insurance Company Proposals

Dr. Adson related what had transpired at the meeting on December 5 when the committee appointed by the Council, all members of the Organizing Committee, had met with insurance company representatives. Several of these companies he stated, are already working with state medical associations. Among those present were representatives from the Employers Mutual of Wausau and the Hardware Mutual of Stevens Point, writing a large number of health contracts in co-operation with the State Medical Society of Wisconsin. Another, the North American of Chicago, has just announced a comprehensive surgical and medical family contract developed in co-operation with the Illinois State Medical Society.

The committee outlined the surgical and medical benefits proposed by Minnesota Medical Service, withholding information about the monthly charges that were contemplated, and asked that each insurance company submit proposals considering these as minimum standards for their contracts. Dr. Adson then presented a chart outlining the proposals which had been submitted following that meeting. Insurance companies not only responded enthusiastically but indicated that they were willing and able to match the benefits proposed and, in many instances, to offer more liberal coverage at lower rates.

On the national scene, he told the delegates, it has become increasingly apparent during the last year or two that large insurance companies have been anxious to co-operate by writing low-cost health, sickness and accident policies, with an over-all coverage which was impossible for medical-profession-sponsored plans to match. It was evident that their motives in evincing this co-operation were not entirely unselfish, Dr. Adson said, but rather it was a concerted attempt on their part to stave off the movement in government circles for compulsory health insurance. Insurance men believe with the doctors that the problem can best be solved by offering such insurance on a completely voluntary basis.

Insurance Men "In Dead Earnest"

That they are in dead earnest has been evidenced, said Dr. Adson, by the many conferences they have had with the Council on Medical Service of the American Medical Association, and also by their co-operative attitude in various state medical association programs.

Just to cite one instance of how successfully the objectives can be attained, Dr. Adson pointed to Wisconsin, which has demonstrated how a physician-sponsored-insurance-carrier program can proceed to spread prepayment medical care to the general public. While some 30,000 contracts have been written under the so-called "Wisconsin Plan" since it got under way in April or May of last year, a great many more than that (probably well over 150,000) have been written as individual contracts under the impetus furnished by the Wisconsin Plan.

After studying all these facts, Dr. Adson said, the committee had come to the unanimous conclusion that it would recommend that two plans be proposed for Minnesota: first, that there be organized immediately a nonprofit Medical Service Corporation, in accordance with the Enabling Act which the medical profession had sponsored; and second, that a broad indemnity insurance program be developed with insurance companies working in close co-operation with a liaison committee of the state association.

Council Takes Action to Spur Program

The committee's recommendations were approved by the delegates and the appointment of the liaison committee was left to the Council. Immediately following adjournment of the House, the Council met in special session and appointed the following committee: Dr. A. W. Adson, Rochester, chairman; Drs. B. J. Branton, Willmar; R. W. Morse, Minneapolis; V. P. Hauser, Saint Paul, and B. J. Gallagher, Waseca.

The Council also asked that each councilor contact and select two physicians from his district, who favor the establishment of the nonprofit corporation, to serve as the incorporators of Minnesota Medical Service. As this article goes to press, these selections are being made, and an important meeting of the incorporators has been scheduled for January 4 in Saint Paul.

DELEGATES HEAR PLEA FOR ESTABLISHMENT OF PRACTICAL NURSE TRAINING SCHOOLS

Following up action taken by the Northern Minnesota and Southern Minnesota Medical Association last fall, Dr. R. F. Hedin, Red Wing, urged the delegates to go on record approving the establishment, as soon as the teaching personnel can be secured and the courses can be set up, of twenty one-year practical nurse training schools to alleviate the critical shortage of nursing personnel in rural areas. The lack of nurses is one of the crucial problems facing the medical profession today, Dr. Hedin said. A report was given on discussions which had taken place by a special committee, composed of representatives from the medical, the hospital, and the nursing professions, which has under consideration the drafting of a bill for the licensure of the practical nurse. It has yet to be determined who shall compose the

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MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

PHYSICIANS LICENSED FEBRUARY 8, 1946

January Examination

Name	*School*		*Address*
ABRAHAMSON, Manford Nels	Temple U.	M.D. 1944	1515 Charles Ave., St. Paul, Minn.
BLACKFORD, Ralph Ellis	Indiana U.	M.D. 1934	Mayo Clinic, Rochester, Minn.
BRAUDE, Abraham Isaac	Rush Med. Col.	M.D. 1940	University Hospital, Minneapolis, Minn.
CULMER, Charles Urness	Northwestern U.	M.B. 1937 M.D. 1940	University Hospital, Minneapolis, Minn.
DAHLIN, David Carl	Rush Med. Col.	M.D. 1940	Mayo Clinic, Rochester, Minn.
ETTINGER, Jerome*	Northwestern U.	M.D. 1944	2024 Commonwealth, St. Paul, Minn.
FAST, John G.	U. of Minn.	M.B. 1941 M.D. 1942	4804 16th Ave. S., Minneapolis 7, Minn.
FISHER, Charles Edward	U. of Colo.	M.D. 1943	Mayo Clinic, Rochester, Minn.
HALFERTY, Daniel Applegate	U. of Oregon	M.D. 1945	St. Joseph's Hospital, St. Paul, Minn.
HALVORSON, Raymond Gaylord	Marquette U.	M.D. 1945	1319 E. Third St., Duluth, Minn.
McDONALD, William J.	Northwestern U.	M.B. 1945	St. Joseph's Hospital, St. Paul, Minn.
McELIN, Thomas Welsh	Harvard U.	M.D. 1944	Mayo Clinic, Rochester, Minn.
MARIS, Robert West	U. of Oregon	M.D. 1945	General Hospital, Minneapolis, Minn.
MICHIENZI, Leonard Joseph	Marquette U.	M.D. 1945	14 Douglas St., St. Paul, Minn.
RALSTON, Donald Everett	Rush Med. Col.	M.D. 1939	Mayo Clinic, Rochester, Minn.
SCHLEPER, Albin John	Marquette U.	M.D. 1945	St. Mary's Hospital, Duluth, Minn.
SMYTH, John Joseph	U. of Iowa	M.D. 1944	Nopeming Sanatorium, Nopeming, Minn.
STEIN, Burton R.	U. of Buffalo	M.D. 1943	Mayo Clinic, Rochester, Minn.
TARUN, Donald Walter	U. of Illinois	M.B. 1943 M.D. 1944	Mayo Clinic, Rochester, Minn.
VASTINE, John Robert	Jefferson Med.	M.D. 1932	Mayo Clinic, Rochester, Minn.

Reciprocity Candidates

BRAASTAD, Frederick William	U. of Mich.	M.D. 1940	Mayo Clinic, Rochester, Minn.
CLOSUIT, Frederick Charles	U. of Minn.	M.B. 1941 M.D. 1942	371 Wilson St., Winona, Minn.
GRIFFIN, John Gordon	U. of Colo.	M.D. 1940	Mayo Clinic, Rochester, Minn.
McDONNELL, James Layton	St. Louis U.	M.D. 1943	Montrose, S. Dak.
RYAN, Robert Emmett	Creighton U.	M.D. 1941	Mayo Clinic, Rochester, Minn.

National Board Candidates

FAWCETT, John Crozier	Northwestern U.	M.B. 1929 M.D. 1930	Devils Lake, N. Dak.
HAAS, William Reid	Duke Univ.	M.D. 1938	1311 W. 24th St., Minneapolis, Minn.
McMAHON, John Martin	Georgetown U.	M.D. 1940	Mayo Clinic, Rochester, Minn.
MORGAN, John Lloyd	U. of Pa.	M.D. 1940	Mayo Clinic, Rochester, Minn.

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*Revoked July 12, 1946.

PHYSICIANS LICENSED MAY 3, 1946

March Examination

ANDERSON, Ray Carl	U. of Minn.	M.B. 1946	3912 W. 7th St., Duluth, Minn.
ANDREASSEN, Rolf Lorntz	U. of Minn.	M.B. 1946	3829 19th Ave. S., Minneapolis, Minn.
ANDREJEK, Arthur R.	U. of Minn.	M.B. 1946	Ivanhoe, Minn.
BAKALINSKY, Max	U. of Minn.	M.B. 1946	Ancker Hosp., St. Paul 1, Minn.
BERG, Clinton Charles	U. of Minn.	M.B. 1946	Ancker Hospital, St. Paul 1, Minn.
BERGER, William J.	U. of Minn.	M.B. 1943 M.D. 1943	311 Broadway, W. Burlington, Iowa
BERGLUND, Eldon Burdette	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
BISSINGER, Lester Leland	U. of Minn.	M.B. 1946	Ancker Hospital, St. Paul, Minn.
BONDURANT, James Earle	U. of Minn.	M.B. 1946	Hurley Hospital, Flint, Mich.
BRACKNEY, Edwin Leland	U. of Minn.	M.B. 1946	University of Chicago Clinics, Chicago, Ill.
CLARK, Robert Strachan	U. of Minn.	M.B. 1946	Ancker Hospital, St. Paul 1, Minn.
COOPER, Robert Ray	U. of Minn.	M.B. 1946	St. Mary's Hospital, Detroit, Mich.
COPE, Hershel Boyd	U. of Minn.	M.B. 1946	Bethesda Hospital, St. Paul 2, Minn.
DAGGETT, Donald R.	U. of Minn.	M.B. 1946	Detroit Receiving Hospital, Detroit, Mich.
DANIELS, Bernard Tetlow	U. of Chicago—Rush Med. Col.	M.D. 1939	Mayo Clinic, Rochester, Minn.
DIESSNER, Grant Roy	U. of Minn.	M.B. 1941 M.D. 1942	Mayo Clinic, Rochester, Minn.
EIDE, Odd Arvid	U. of Minn.	M.B. 1946	Fertile, Minn.
ENGSTROM, Denton Paul	U. of Minn.	M.B. 1946	St. Barnabas Hospital, Minneapolis, Minn.

Name	*School*		*Address*
ENGSTROM, Frederick W.	U. of Minn.	M.B. 1946	Detroit Receiving Hospital, Detroit, Mich.
ERICKSON, Ethel Elma	U. of Minn.	M.B. 1946	Lenox Hill Hospital, New York City
ESENSTEN, Sidney	U. of Minn.	M.B. 1946	3416 Hennepin Ave., Minneapolis 8, Minn.
FRANZ, Willis Martin	U. of Minn.	M.B. 1946	Miller Hospital, St. Paul, Minn.
FREY, Richard Joseph	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
FRIEND, Merril B.	U. of Minn.	M.B. 1946	Beth Israel Hospital, Newark, N. J.
FULLER, Benjamin Franklin, Jr.	U. of Minn.	M.B. 1945 M.D. 1946	2187 Berkeley Ave., St. Paul 5, Minn.
GALLIGAN, John J.	U. of Minn.	M.B. 1946	Univ. of Minn. Hosp., Minneapolis 14, Minn.
GILBERTSON, David Grosser	U. of Minn.	M.B. 1946	John Sealy Hospital, Galveston, Texas
GOLDISH, Robert Joseph	U. of Minn.	M.B. 1946	St. Luke's Hospital, Duluth, Minn.
GORDON, Harold Norman	U. of Minn.	M.B. 1946	University of Chicago Clinics, Chicago, Ill.
GORDON, Milton Earle	U. of Minn.	M.B. 1946	Fordham Hospital, Bronx, N. Y.
GREEN, Robert Alan	U. of Minn.	M.B. 1941 M.D. 1942	Univ. of Minn. Hosp., Minneapolis 14. Minn.
GUMPRECHT, Jane Doering	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
HADDY, Francis John	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
HANSON, Herbert Theodore	U. of Minn.	M.B. 1946	Salt Lake Co. Gen. Hosp., Salt Lake City, Utah
HAUSER, Donald Charles	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
HEILIG, William Richard	U. of Minn.	M.B. 1946	Northwestern Hospital, Minneapolis 7, Minn.
HUBLER, Willis Lester	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
IRMISCH, George William	Temple U.	M.D. 1940	Mayo Clinic, Rochester, Minn.
JACOBSON, Lyle Frederick	U. of Minn.	M.B. 1946	Detroit Receiving Hospital, Detroit, Mich.
JARVIS, Charles W.	U. of Minn.	M.B. 1946	Tacoma General Hospital, Tacoma, Wash.
JENSEN, Mary Jane	U. of Minn.	M.B. 1946	Children's Hospital, San Francisco, Calif.
KARLEN, Markle	U. of Minn.	M.B. 1946	Mercy Hospital, Chicago, Ill.
KAUFMAN, Jerome Edward	U. of Minn.	M.B. 1946	1204 Upton Ave. N., Minneapolis 11, Minn.
KIESLER, Frank, Jr.	U. of Minn.	M.B. 1941 M.D. 1942	Univ. of Minn. Hosp., Minneapolis 14, Minn.
KIRKPATRICK, Neal Richard	U. of Wis.	M.D. 1943	Mayo Clinic, Rochester, Minn.
KNUTSON, Robert Charles	U. of Minn.	M.B. 1946	St. Louis City Hospital, St. Louis, Mo.
LIENKE, Roger I.	U. of Minn.	M.B. 1946	Univ. of Minn. Hosp., Minneapolis 14, Minn.
LINDBERG, Winston Rudolph	U. of Minn.	M.B. 1946	Wesley Memorial Hospital, Chicago, Ill.
LINNER, Paul William	U. of Minn.	M.B. 1946	Denver General Hospital, Denver, Colo.
LOWREY, Jack Beltman	U. of Minn.	M.B. 1946	St. Joseph's Hospital, St. Paul 2, Minn.
LUND, George Weldon	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
McCORMACK, Joseph George	U. of Minn.	M.B. 1946	3423 Harriet Ave. S., Minneapolis 8, Minn.
MAHAFFY, John H.	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
MANDEL, Sheldon Lloyd	U. of Minn.	M.B. 1946	2924 18th Ave. N., Minneapolis, Minn.
MARTURANO, Frank Paul	U. of Minn.	M.B. 1940 M.D. 1941	Veterans Hospital, Minneapolis 6, Minn.
MAYNE, John Gregory	U. of Minn.	M.B. 1946	3028 E. Superior St., Duluth 5, Minn.
MIDTHUNE, Andreen Sylvain	U. of Minn.	M.B. 1946	829 8th St. S., Minneapolis 4, Minn.
MILLER, William Thomas	U. of Minn.	M.B. 1946	Ancker Hospital, St. Paul 1, Minn.
MISBACH, William Durward	U. of Minn.	M.B. 1946	Fairmont, Minn.
MOORE, George Eugene	U. of Minn.	M.B. 1946	4239 Crocker Ave., Minneapolis 10, Minn.
MUESING, William James	U. of Minn.	M.B. 1946	400 S. Washington St., New Ulm, Minn.
NOLLET, Donald James	U. of Minn.	M.B. 1946	901 E. 5th St., St. Paul 6, Minn.
NORBY, Richard Gerhard	U. of Minn.	M.B. 1946	3056 N. Cramer St., Milwaukee 11, Wis.
OLSON, Detlof Maynard	U. of Minn.	M.B. 1946	4249 Dupont Ave. N., Minneapolis 12, Minn.
OPSTAD, Earl Thomas	U. of Minn.	M.B. 1946	Glen Lake Sanitorium, Oak Terrace, Minn.
OURADA, Anthony L.	U. of Minn.	M.B. 1946	Walnut Grove, Minnesota
PERRY, Harold Otto	U. of Minn.	M.B. 1946	20 10th St. N. E., Rochester, Minn.
PETELER, Jennings, C. L.	U. of Minn.	M.B. 1946	Receiving Hospital, Detroit, Mich.
PETERSON, Roy Lawrence	U. of Minn.	M.B. 1946	U. S. Marine Hospital, Detroit 15, Mich.
PHALEN, Joseph Stephen	U. of Minn.	M.B. 1946	Univ. Hosp., Univ. of Mich., Ann Arbor, Mich.
POTTHOFF, Herbert Benjamin	U. of Minn.	M.B. 1946	Colorado General Hospital, Denver, Colo.
REMOLE, William Dunn	U. of Minn.	M.B. 1946	Milwaukee County Hospital, Milwaukee, Wis.
ROCKNEM, Robert Eric	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
ROHOLT, Hartvig Benhail	U. of Minn.	M.B. 1946	Milwaukee County Hospital, Milwaukee, Wis.
ROSE, Ray Vincent	U. of Minn.	M.B. 1946	2292 Carter Ave., St. Paul 8, Minn.
ST. CYR, Harry Merlin	U. of Minn.	M.B. 1946	St. Luke's Hospital, Duluth, Minn.
SAKO, Yoshio	U. of Minn.	M.B. 1946	Univ. of Minn. Hosp., Minneapolis 14. Minn.
SCHIMNOSKI, Donald Ray	U. of Minn.	M.B. 1946	Fordham Hospital, New York, N. Y.
SCHULTZ, Alvin Leroy	U. of Minn.	M.B. 1946	Ohio State University Hosp., Columbus, Ohio
SHRAGG, Robert Israel	U. of Minn.	M.B. 1946	1504 4th St. S. E., Minneapolis 14, Minn.
SMITH, George Randall	U. of Minn.	M.B. 1946	John Sealy Hosp., U. of Texas, Galveston, Tex.
SMITH, Ralph Eugene	U. of Minn.	M.B. 1945 M.D. 1946	125 Oak Grove, Minneapolis, Minn.
SMITH, Richard Clinton	U. of Minn.	M.B. 1946	St. Joseph's Hospital, St. Paul, Minn.
SOLVASON, Harold Magnus	U. of Minn.	M.B. 1946	4616 Wooddale Ave., Minneapolis. Minn.
SPERLING, Sydney Coleman	U. of Minn.	M.B. 1946	Michael Rees Hospital, Chicago, Ill.
STEVENSON, Helen Peik	U. of Minn.	M.B. 1946	Rochester General Hospital, Rochester, N. Y.
THOMAS, John Verran	U. of Minn.	M.B. 1946	Albany Hospital, Albany, N. Y.
ULSTROM, Robert Alger	U. of Minn.	M.B. 1946	Strong Memorial Hospital, Rochester, N. Y.
von AMERONGEN, Werner Wm.	U. of Minn.	M.B. 1946	485 Rice St., St. Paul 3, Minn.

Name	*School*		*Address*
WENTE, Harold Alois	U. of Minn.	M.B. 1946	St. Joseph's Hospital, Milwaukee, Wis.
WESTMAN, Charles Will	U. of Minn.	M.B. 1946	Emanuel Hospital, Portland, Ore.
WIERZBINSKI, Francis Albert	U. of Minn.	M.B. 1946	C. T. Miller Hospital, St. Paul 2, Minn.
WOLFF, John Maney	U. of Minn.	M.B. 1946	St. Mary's Hospital, Duluth, Minn.
WOLTER, Frederick Henry	U. of Minn.	M.B. 1946	Ancker Hospital, St. Paul 1, Minn.
ZELLER, Nicholas Henry	U. of Minn.	M.B. 1946	St. Mary's Hospital, Duluth 5, Minn.

Reciprocity Candidates

BLAIR, James Berl	U. of Neb.	M.D. 1939	Clarkson Memorial Hospital, Omaha, Neb.
BROWN, Hugh Sharp	Med. Col. Va.	M.D. 1943	Mayo Clinic, Rochester, Minn.
GLENN, William Vincent	U. of Neb.	M.D. 1940	Mayo Clinic, Rochester, Minn.
IVINS, John Cyrus	U. of Neb.	M.D. 1939	Mayo Clinic, Rochester, Minn.

PHYSICIANS LICENSED MAY 3, 1946

April Examination

ANDERSON, Donald Carl	U. of Minn.	M.B. 1944 M.D. 1945	Lamberton, Minn.
BURLEIGH, John Sullivan	U. of S. Calif.	M.D. 1941	Luverne, Minn.
CALIN, Stanford Hartley	U. of Minn.	M.B. 1946	Denver General Hospital, Denver, Colo.
COLLETT, Robert Waterman	U. of Kans.	M.D. 1944	Mayo Clinic, Rochester, Minn.
EBERLEY, Tobe Sommers	U. of Minn.	M.B. 1941 M.D. 1942	Perham, Minn.
FAULCONER, Albert, Jr.	U. of Kans.	M.D. 1936	Mayo Clinic, Rochester, Minn.
FREEMAN, Donald Wilmer	U. of Minn.	M.B. 1941 M.D. 1942	1527 E. River Terrace, Minneapolis 14, Minn.
FRIESEN, Stanley Richard	U. of Kans.	M.D. 1943	Univ. of Minn. Hosp., Minneapolis 14, Minn.
FRETHEM, Ardelles Allen	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
GIBSON, Dunbar Porter	Howard Univ.	M.D. 1940	424 Metropolitan Bank Bldg., St. Paul 1, Minn.
HAYES, Elmer Russell	Baylor Univ.	M.D. 1938	Univ. of Minn. Hosp., Minneapolis 14. Minn.
HEALY, Joseph Patrick	Creighton U.	M.D. 1945	3328 N. 44th Ave., Omaha, Neb.
HEWITT, Charles Christian	U. of Minn.	M.B. 1946	Christmas Lake, Excelsior, Minn.
JOHNS, Sylvia Maury	U. of Texas	M.D. 1944	Mayo Clinic, Rochester, Minn.
KEATING, John Urich	Cornell U.	M.D. 1944	Mayo Clinic, Rochester, Minn.
KINPORTS, Edward Backus	U. of Chicago	M.D. 1942	439 Third St., International Falls, Minn.
KOLLER, Robert Louis	U. of Minn.	M.B. 1946	St. Joseph's Hospital, St. Paul, Minn.
KULLAND, Roy Emmanuel	Baylor U.	M.D. 1945	701 Summit Ave., St. Paul 5, Minn.
LaFOND, Edward Marcus	U. of Minn.	M.B. 1944 M.D. 1945	Fairview Hospital, Minneapolis 6, Minn.
LAMPERT, Elmer Graham	Loyola U.	M.D. 1940	Mayo Clinic, Rochester, Minn.
LAW, Stanley Guy	U. of Chicago Rush. Med. Col.	M.D. 1930	1409 Willow St., Minneapolis 4, Minn.
LOYD, Earl Lavon	U. of Kans.	M.D. 1941	Mayo Clinic, Rochester, Minn.
LUNDELL, Carl Lamberg	U. of Minn.	M.B. 1942 M.D. 1943	Granite Falls Clinic, Granite Falls, Minn.
McCOOL, Robert Francis	St. Louis U.	M.D. 1946	Miller Hospital, St. Paul 2, Minn.
MOVIUS, Andrew M.	U. of Minn.	M.B. 1945	Virginia Lane, Billings, Mont.
MUNDAHL, Harold Russell	Marquette U.	M.D. 1945	1600 Ashland Ave., St. Paul 5, Minn.
O'BRIEN, Raymond Wilson	U. of Kansas	M.D. 1943	Mayo Clinic, Rochester, Minn.
PELTZER, Wesley Eugene	U. of Ill.	M.D. 1939	Mayo Clinic, Rochester, Minn.
SCHROEDER, Mellgren Cuyler	Northwestern U.	M.D. 1937	728 22nd St., San Francisco 7, Calif.
SLAUGHTER, Owen Leroy	U. of Neb.	M.D. 1943	Mayo Clinic, Rochester, Minn.
STENERODDEN, Sidney Clinton	Rush Med. Col.	M.D. 1941	St. Cloud Clinic, St. Cloud, Minn.
STENNES, John Lowell	Wash. U., Mo.	M.D. 1941	816 LaSalle Bldg., Minneapolis 2, Minn.
TOWNE, Russel Edward	St. Louis U.	M.D. 1945	328 E. Henn., Rm. 205, Minneapolis 14, Minn.
WALSH, Alvin Cyril	U. of Manitoba	M.D. 1939	Mayo Clinic, Rochester, Minn.
WARKENTIN, John	Northwestern U.	M.B. 1942 M.D. 1943	228 E. Huron St., Chicago 11, Ill.
WILLIAMS, Russell Ross, Jr.	Ohio State U.	M.D. 1943	Mayo Clinic, Rochester, Minn.
WOOLNER, Lewis Benjamin	Dalhousie U.	M.D. 1942	Mayo Clinic, Rochester, Minn.

Reciprocity Candidates

CAIN, James Henry	U. of Okla.	M.D. 1942	Hoffman, Minn.
CORBIN, Kendall Brooks	Stanford U.	M.D. 1935	Mayo Clinic, Rochester, Minn.
DORNBERGER, George Raymond	U. of Neb.	M.D. 1938	Mayo Clinic, Rochester, Minn.
FISHER, Dan William	U. of Mich.	M.D. 1929	Emerson Clinic, E. 7th & Mounds Blvd. St. Paul, Minn.
HANSEN, Theodore Marcus	U. of Neb.	M.D. 1942	Box 389, Alden, Minn.
HILDEBRAND Carl Herbert, Jr.	U. of Neb.	M.D. 1942	101 7th Ave. S., St. Cloud, Minn.
KUMPURIS, Frank Gus.	Tulane U.	M.D. 1943	Mayo Clinic, Rochester, Minn.
PARKE, Fred Ford	Northwestern U.	M.B. 1941 M.D. 1942	Mayo Clinic, Rochester, Minn.

Name	*School*		*Address*
TEICH, Kenneth William	U. of Neb.	M.D. 1943	Duluth Clinic, 205 W. 2nd St., Duluth 2, Minn.
WEISBERG, Raphael Joseph	U. of Minn.	M.B. 1940 M.D. 1941	Univ. of Minn. Hosp., Minneapolis 14, Minn.
WRIGHT, Robert Raymond	Northwestern U.	M.B. 1940 M.D. 1941	Austin Clinic, 209 W. Mill St., Austin, Minn.

National Board Candidates

BUSSE, Edwin Arthur	Boston U.	M.D. 1942	4400 W. 44th St., Minneapolis 10, Minn.
DOUGLAS, John Munroe	Duke Univ.	M.D. 1939	Mayo Clinic, Rochester, Minn.
GROSKLOSS, Howard Hoffman	Yale U.	M.D. 1935	735 Med. Arts Building, Minneapolis 2, Minn.
McCONAHEY, Wm. McConnell, Jr.	Harvard U.	M.D. 1942	Mayo Clinic, Rochester, Minn.
MOERSCH, Robert Urban	U. of Pa.	M.D. 1944	710 9th Ave. S. W., Rochester, Minn.
SEKHON, Mohan Singh	U. of Minn.	M.B. 1940 M.D. 1941	1533 Como Ave., St. Paul 4, Minn.
SHELLITO, John Gardiner	Northwestern U.	M.B. 1942 M.D. 1943	Mayo Clinic, Rochester, Minn.

PHYSICIANS LICENSED JULY 12, 1946

June Examination

ANDERSON, James John	U. of Alberta	M.D. 1941	Miller Hospital, St. Paul 2, Minn.
ANDERSON, Margaret Connor	U. of Manitoba	M.D. 1938	Fairview Hospital, Minneapolis, Minn.
ANDERSON, Russell Edward	Syracuse U.	M.D. 1939	Mayo Clinic, Rochester, Minn.
ARHELGER, Stuart Waldo	U. of Wis.	M.D. 1945	916 Medical Arts Building, Duluth, Minn.
BARGER, James Daniel	U. of Pa.	M.D. 1941	Mayo Clinic, Rochester, Minn.
BARONOFSKY, Ivan Donald	Marquette U.	M.D. 1943	Univ. of Minn. Hosp., Minneapolis 14, Minn.
BEAHRS, Oliver Howard	Northwestern U.	M.B. 1941 M.D. 1942	Mayo Clinic, Rochester, Minn.
BREITENBUCHER, Robt. Bertram	U. of Minn.	M.B. 1946	Univ. of Minn. Hosp., Minneapolis 14, Minn.
BROKER, Henry Michael	Marquette U.	M.D. 1945	208 8th St. So., St. Cloud, Minn.
CROSS, Frederick Samuel	Western Reserve	M.D. 1945	2284 W. Lk. of Isles Blvd., Mpls. 5, Minn.
DEWEERD, James Henry	U. of Mich.	M.D. 1940	Mayo Clinic, Rochester, Minn.
DODDS, William Clark	U. of Minn.	M.B. 1943 M.D. 1944	St. Luke's Hospital, Thief River Falls, Minn.
ELLISON, Ellis	U. of Minn.	M.B. 1946	Minneapolis Gen. Hosp., Minneapolis 15, Minn.
FINK, James Russell	Loyola U.	M.D. 1938	2501 W. Deyon Ave., Chicago, Ill.
FORD, John Laurence	Marquette U.	M.D. 1945	600 W. Redwood St., Marshall, Minn.
FORSGREN, Arthur Lawrence	U. of Minn.	M.B. 1944 M.D. 1945	1299 Seminary, St. Paul, Minn.
FRIEDMAN, Jack	U. of Ill.	M.D. 1939	Ancker Hospital, St. Paul, Minn.
GARSKE, George Leo	U. of Minn.	M.B. 1944 M.D. 1945	4949 Colfax Ave. So., Minneapolis 9, Minn.
GROOM, Dale	Med. Col. of Va.	M.D. 1943	Mayo Clinic, Rochester, Minn.
HANSEN, Robert Edward	U. of Minn.	M.B. 1943 M.D. 1943	St. Mary's Hospital, Duluth, Minn.
HENEGAR, George	U. of Ill.	M.D. 1942	Mayo Clinic, Rochester, Minn.
HILKER, Marcus Dudley	U. of Minn.	M.B. 1941 M.D. 1942	634 Hamm Building, St. Paul, Minn.
HOON, James Richard	U. of Pittsburgh	M.D. 1940	Mayo Clinic, Rochester, Minn.
HUNT, Van William	U. of Chicago	M.D. 1944	Mayo Clinic, Rochester, Minn.
JOHNSON, Benjamin Hardy, Jr.	Northwestern U.	M.B. 1940 M.D. 1941	Mayo Clinic, Rochester, Minn.
JOHNSON, Merton Ardell	Loyola U.	M.D. 1943	Route No. 1, Maple Plain, Minn.
KALLSEN, Robert August	U. of Minn.	M.B. 1944 M.D. 1945	Pipestone, Minn.
KEVERN, Jay Leland	U. of Minn.	M.B. 1944 M.D. 1945	10830 So. Pacific Hwy., Seattle 88, Wash.
KRAWCZYK, Henry Joseph	U. of Minn.	M.B. 1945 M.D. 1946	1217 5th St. N. E., Minneapolis, Minn.
KRUCHEK, Thomas Francis	Creighton U.	M.D. 1946	St. Mary's Hospital, Minneapolis, Minn.
LALLY, James J.	Northwestern U.	M.B. 1943 M.D. 1944	Mayo Clinic, Rochester, Minn.
LEE, Jack Bennett	U. of Texas	M.D. 1938	Mayo Clinic, Rochester, Minn.
LEWIS, Charles William	U. of Minn.	M.B. 1944 M.D. 1945	Henning, Minn.
LISTER, Kenneth Evan	U. of Iowa	M.D. 1938	5043 41st Ave. So., Minneapolis 6, Minn.
MACH, Ralph Franklin	U. of Minn.	M.B. 1945 M.D. 1946	New Prague, Minn.
MAERTZ, Richard William	Creighton U.	M.D. 1946	658 Grand Ave., St. Paul, Minn.
MASLER, Sherman	U. of Minn.	M.B. 1939 M.D. 1940	Veterans Hospital, Minneapolis 6, Minn.
McBEAN, James Blish	Chicago U.	M.D. 1935	Mayo Clinic, Rochester, Minn.
McGRAW, John Phillip	U. of Colo.	M.D. 1939	6020 4th Ave. So., Minneapolis, Minn.
MEDLIN, Charles Fred	U. of Minn.	M.B. 1942 M.D. 1943	Truman, Minn.

Name	*School*		*Address*
MORRIS, Donald Shonk	Med. Col. of Va.	M.D. 1941	Mayo Clinic, Rochester, Minn.
NERENBERG, Samuel Theodore	U. of Minn.	M.B. 1945 M.D .1946	Veterans Hospital, Knoxville, Iowa
NIGRO, Joseph Albert	St. Louis U.	M.D. 1942	Mayo Clinic, Rochester, Minn.
NIXON, James Barron	U. of Minn.	M.B. 1944 M.D. 1945	519 1st St. S. W., Crosby, Minn.
PARKIN, Thomas William	Northwestern U.	M.B. 1945 M.D. 1945	Mayo Clinic, Rochester, Minn.
PFUETZE, Max Ensign	U. of Kans.	M.D. 1940	Mayo Clinic, Rochester, Minn.
RANG, Robert Halter	Indiana U.	M.D. 1940	Mayo Clinic, Rochester, Minn.
REMSBERG, Robert Raymond	U. of Kans.	M.D. 1942	Valentine Clinic, Tracy, Minn.
RYDLAND, Arne Daniel	Marquette U.	M.D. 1944	Crookston, Minn.
RYNDA, Edwin Roger	Loyola Univ.	M.D. 1945	U. S. Vet. Adm., Fac., St. Cloud, Minn.
SALASSA, Robert Maurice	Indiana Univ.	M.D. 1939	Mayo Clinic, Rochester, Minn.
SCHMID, John Frederic	U. of Minn.	M.B. 1941 M.D. 1942	Veterans Hospital, Minneapolis, Minn.
SHARICK, Paul Robert	U. of Minn.	M.B. 1945 M.D. 1946	2328 4th Ave. W., Hibbing, Minn.
SMITH, Franklin Robert	Marquette U.	M.D. 1942	Mayo Clinic, Rochester, Minn.
STAM, John	U. of Ill.	M.D. 1943	953 Medical Arts Bldg., Minneapolis 2, Minn.
STEVENS, John Edgar, Jr.	Med. Col. of Va.	M.D. 1941	Mayo Clinic, Rochester, Minn.
STIMAC, Emil Michael	U. of Minn.	M.B. 1945 M.D. 1946	1512 10th St. So., Virginia, Minn.
STONE, Norman Francis	U. of Minn.	M.B. 1944	91 N. 16th St., Minneapolis 3, Minn.
STRAND, Sherman O'Neil	U. of Minn.	M.B. 1945 M.D. 1946	538 Snelling Ave. No., St. Paul 4, Minn.
STUERMER, Harry Walter	U. of Ill.	M.D. 1944	4808 Nicollet Ave., Minneapolis 9, Minn.
THORSEN, David Stuart	U. of Minn.	M.B. 1943 M.D. 1943	3536 Edmund Blvd., Minneapolis, Minn.
WINCHESTER, Wm. Wellington	U. of Chicago Rush Med. Col.	M.D. 1942	Mayo Clinic, Rochester, Minn.

Reciprocity Candidates

BIGLER, Earl Edward	Northwestern U.	M.B. 1934 M.D. 1936	221 E. 4th St., Claremont, Okla.
BLOEMENDAAL, Edwin John Gerald	U. of Iowa	M.D. 1936	Lake Park, Minn.
CLARK, Ivan Thomas	Ohio U.	M.D. 1941	824 Medical Arts Building, Duluth, Minn.
COLBERT, Lawrence Desmond	Creighton U.	M.D. 1942	Royal, Iowa
HAMMER, Raymond W.	Wayne U.	M.B. 1940 M.D. 1941	Mayo Clinic, Rochester, Minn.
HASTINGS, Donald Wilson	U. of Wis.	M.D. 1934	126 Millard Hall Univ. of Minn., Mpls., Minn.
JACOBSON, Ferdinand Carl	U. of Chicago Rush Med. Col.	M.D. 1936	St. Luke's Hospital, Duluth 5, Minn.
KOSZALKA, Michael Francis	Georgetown	M.D. 1938	2301 Arthur St. N. E., Minneapolis 13, Minn.
MAREK, Frank Henry	Tulane U.	M.D. 1940	Mayo Clinic, Rochester, Minn.
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National Board Candidates

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GRULEE, Clifford Grosselle	Northwestern U.	M.D. 1938	Dept. of Ped., U. Hosp., Minneapolis 14, Minn.
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McAFEE, George Deshon	Geo. Wash. U., D. C.	M.D. 1941	NPBA Hosp., 1515 Charles, St. Paul, Minn.
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SORENSEN, Roy Warren	Col. Med. Evangelists	M.D. 1944	R.R. No. 3, Wayzata, Minn.
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PHYSICIANS LICENSED NOVEMBER 8, 1946

October Examination

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BERRIS, Barnet	U. of Toronto	M.D. 1944	Box 45, Univ. Hosp., Minneapolis, Minn.
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HIGHTOWER, Nicholas Carr, Jr.	U. of Texas	M.D. 1944	Mayo Clinic, Rochester, Minn.
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Internal Derangement of the Knee

(Continued from Page 44)

that a stiff knee will not result from the operation. Naturally some immediate postoperative stiffening due to pain and lack of use will occur but, barring ankylosis of the knee which results from severe postoperative infection, stiffness of the knee does not occur after operation. It is our duty as physicians to dispel the still prevalent opinion among both laymen and physicians that letting the synovial fluid off the knee will cause stiffness.

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Minneapolis Surgical Society

STATED MEETING HELD OCTOBER 3, 1946

The President, Robert F. McGandy, M.D., in the Chair

THE SURGICAL APPROACH TO RENAL AND OTHER RETROPERITONEAL TUMORS

THEODORE H. SWEETSER, M.D.
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Abstract

Three factors are especially important in the surgical approach to any malignant tumor. First it must allow exposure and division of the veins and lymphatics before any tumor cells can be squeezed into them by operative manipulation. Secondly the approach must give the best possible exposure of the tumor and it's surroundings in order to allow better hemostasis and more accurate dissection. Thirdly and less important, overlying tissues and neighboring organs should be damaged as little as possible. Damage to nerve trunks is most serious because of the consequent muscle paralysis. Damage to the neighboring intraperitoneal organs and to the patient's general functions is also serious and may be caused by prolonged exposure and by the manipulation of packs and retractors.

Operation for any mass in the kidney or retroperitoneal tissues should be undertaken with recognition of the possibility of malignancy and with adequate preparation and draping of the field. Malignancy being often in question, exploration is begun through an oblique incision in the flank, and only when malignancy is demonstrated is the incision extended as described.

In cases of malignancy (on the right side, for example) the oblique incision is extended parallel to and between the eleventh and twelfth dorsal nerve trunks across the right rectus muscle about halfway between the navel and the symphysis pubis and extended thence upward close to the median line to the xyphoid. The large triangular flap is lifted laterally and upward over the retracted right rib margin. With sufficiently extensive skin preparation beforehand, the entire incision is made easily while the operator remains in the usual position behind the patient. Using the extraperitoneal layer of fat as a line of cleavage, the peritoneum is pushed aside unopened. The left abdominal wall and abdominal contents enclosed in peritoneum fall away by gravity toward the patient's left, exposing the right renal vessels with very little retraction. We have been astounded at the good exposure and ease of approach to the renal vessels without manipulation of the kidney. We also have been pleased by the prompt, strong healing of the wound.

The incision described above preserves the nerve supply of all the abdominal muscles. The unopened peritoneum helps in control and retraction of the intraperitoneal organs and protects them from infection and damage by evaporation and by trauma of packs and retractors. The lateral posture of the patient and shape of the flap result in better exposure than any other approach because the abdominal contents drop away toward the opposite side with little or no need for retractors, and the area of the renal vascular pedicle comes well up into the wound for accurate and adequate primary treatment.

In cases of papillary carcinoma of the renal pelvis or ureter, one should deal with the lower end of the ureter and ureteral orifice even before dealing with the renal vascular pedicle. That can be done easily with the approach described by extending the midline part of the incision downward to the symphysis as well as upward. That allows one to reach the lower ureter at least as easily as by the midline suprapubic incision of Monsarrat. As suggested by Hugh Cabot in his paper in 1925, there are other conditions in which the advantages of unusually good operative exposure will recommend this approach. I would recommend it particularly for certain cases of tuberculosis and calculous pyonephrosis wherein extensive inflammatory reaction and fibrosis make protection of neighboring organs particularly difficult.

Discussion

Dr. Stanley R. Maxeiner: I talked to Doctor Sweetser about this incision, anticipating its use in a case of hypernephroma. Subsequently I used it with great satisfaction. I could only suggest that the lower end of the incision be curved instead of a sharp angle as the curved flap will undoubtedly heal better than will a sharp-angle flap. Those who observed the use of the incision stated that it was nearer an autopsy exposure than anything they had ever seen. I have subsequently examined the patient and he had primary healing with a completely competent scar.

TRANSTHORACIC GASTRECTOMY

Case Report

STANLEY R. MAXEINER, M.D., F.A.C.S.
Minneapolis, Minnesota

Carcinoma of the cardiac portion of the stomach has until recently been extremely resistant to surgical attack. The abdominal approach has been very difficult and too often productive of poor end results. Only in recent years has it been attacked transthoracically and transdiaphragmatically. This approach has been made

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Abstract of paper to be published in Journal of Urology.

safer by the use of endotrachial anesthesia which permits compression or expansion of the lung at will. Ohsawa[6], about 1933, performed three transthoracic gastrectomies but none survived. It was not until 1938 that Adams and Phemister[1] reported the first successful transthoracic resection of the distal end of the esophagus and cardiac portion of the stomach with esophagogastrostomy. This patient was reported well without recurrence three years and four months later. Ochsner and DeBakey[5] performed the first similar operation for carcinoma of the stomach.

This operation has now been popularized by Phemister, Garlock, Ochsner and DeBakey, Sweet, Clagett and others. The early mortality was very high but with increasing experience and greater advancements in technique, it has been reduced so that it now compares favorably with similar surgery via the abdominal route.

Bradshaw and O'Neill[2] report a mortality rate of 46.6 per cent in approximately fifty-six patients so treated. Garlock[4] in four years explored twenty-five patients with adenocarcinoma of the pars cardia. Nine were found operable, that is, 36 per cent. There was no mortality in the inoperable group and the nine operable patients received radical surgery with four deaths, that is, 44.4 per cent mortality. Garlock states that from their experience and that of others, a patient with a resectable carcinoma of the pars cardia has a 60 per cent chance of surviving the operation and then an 80 per cent chance of living two years or more. Clagett[3] reports fifty-seven transthoracic operations on the cardia and lower esophagus, of which twenty-four were found to be inoperable and thirty-three underwent resection. There were no deaths among the explored cases; and of the thirty-three who underwent radical resection, five died, a mortality of about 15 per cent. Thus, the mortality of transthoracic gastric operations in his hands does not carry a much greater mortality than carcinomata of the stomach approached via the abdominal route. He states that carcinoma of the cardia occurs in about 10 per cent of all carcinomata of the stomach and that 33 to 60 per cent of carcinomata of the esophagus occur in its lower third.

Because of the fact that carcinoma of the cardia spreads upward toward and into the esophagus and that the reverse is true of carcinoma of the esophagus, both lesions are usually discussed together. There is no block which limits the spread of the disease as occurs at the pylorus. Lesions in this area may require resection of both the stomach and the esophagus, which requirement demands that they be approached transthoracically

The diagnosis of carcinoma is usually made by x-ray examinations. Clinical signs and symptoms may not even suggest the presence of a gastric lesion, but dysphagia suggests a lesion in the esophagus or one in the cardia extending into the esophagus. The gastroscope is probably least valuable in lesions of the cardia, but in the esophagus it may determine the exact area of involvement and, through biopsy, the character of the growth. Lahey has for years advised exploration of gastric lesions of doubtful character. Bradshaw and O'Neill[2] strongly endorse the recommendation of Ochsner and DeBakey that exploration of this obscure area of the stomach is even more imperative. Several writers on this subject recommend preliminary exploration through an abdominal incision but Clagett[3] states that extension of carcinoma of the cardia above the diaphragm can be determined and surgically removed only through a transthoracic incision. On the other hand, the extent of the involvement of the liver and regional glands and the degree of fixation which determine the operability of a carcinoma are just as easily detected through an incision in the diaphragm, with no greater hazard. A preliminary abdominal exploration in the presence of a resectable lesion means two operations or two incisions at one operation and constitutes an unnecessary added load on a patient who is already a substandard risk.

Preliminary preparation of the patient implies a complete evaluation of his examination reports which might contraindicate surgery. Transfusions, high protein diet, vitamins, intravenous fluids, et cetera, should be used to counteract the effect of weight loss, dehydration, debility and anemia. Sulfa drugs and penicillin are favored preoperatively by some. This preparation and careful study demands adequate preoperative hospitalization.

The subject of anesthesia for thoracic surgery will be left for the discussion of our specialist in that field, Dr. Ralph Knight.

The technique of transthoracic resection of the cardia and lower end of the esophagus is not yet standardized, but certain fundamental principles are universal.

After the induction of anesthesia and the introduction of the endotrachial tube the patient is placed on his right side and his position well secured by pillows, sand bags and straps or wide adhesive tape. The left arm should be anchored to a frame at the head of the table. Intravenous needles of competent size should be introduced and the solution kept dripping so that fluid and blood may be given as indicated throughout the entire operation. A catheter with suction is retained in the esophagus to prevent gastric content from entering the pharynx and lungs. The chest area should be prepared widely and draped.

A long incision is made over the ninth rib which is removed subperiosteally from the cartilage anteriorly well back to the spine. The pleura is opened and the ribs widely spread apart and, if necessary, the seventh and eighth ribs may be divided posteriorly to increase the exposure. The lung is permitted to collapse partially and is retracted into the upper chest. The diaphragm may be paralyzed temporarily by injection of the left phrenic nerve as it traverses the lateral wall of the pericardium. Involvement of the esophagus, mediastinal regional glands or pleura can be determined by palpation and vision. The diaphragm is next incised radially in its dome to permit abdominal exploration. Vision of adjacent stomach and peritoneum is now possible and the examining hand may be passed through the rent in the diaphragm and the stomach, liver, regional glands, omentum, et cetera, palpated or visualized. Exploration should determine the operability of the carcinoma and if the lesion is inoperable the diaphragm is sutured and the chest closed. If the lesion is found to be resectable, the rent in the diaphragm is enlarged so as to join the esophageal hiatus. The esophagus is freed and the upper involved area of the stomach and regional glands are liberated. As in any other gastric resection it may be advantageous to include the spleen, omentum and part of the tail of the pancreas in the mass removal. The stomach is clamped below the growth and closed completely. Although the stomach has unusual vascularity, one must be alert not to devascularize it entirely. The right gastroepiploic surely and the right gastric artery if possible should be preserved. The esophagus is divided above the upper limits of the lesion. Light compression about the esophagus above the lesion during liberation of the stomach will prevent expression of gastric content into the pharynx. The cut-off end of the esophagus is now anastomosed with nonabsorbable sutures to the anterior wall of the remaining part of the stomach. Free stomach is brought into the chest to prevent any pull on the line of suture and the diaphragm is closed about the stomach, to which it then is anchored. The tube in the esophagus is now passed into the stomach for the purpose of suction or early feeding. Two rubber tubes are introduced through stab wounds into dependent sites in the pleural cavity. Continual suction for a few days removes pleural fluid and induces expansion of the lung. Bronchoscopic aspiration at the close of the operation may be advisable to remove gastric content from the bronchi.

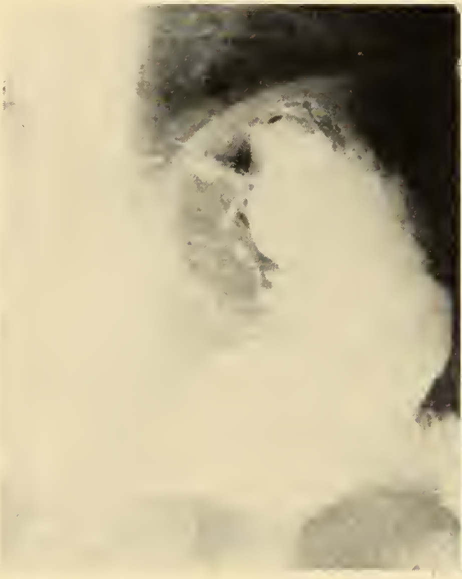

Fig. 1. X-ray shows an extensive carcinoma, causing a large filling defect in the pars cardia of the stomach.

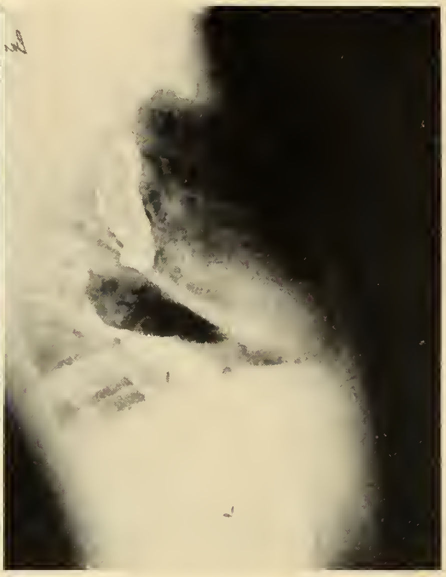

Fig. 2. X-ray shows the slightly dilated esophagus, the anastomosis to the anterior wall of the intrathoracic stomach and the narrowed, tubulated stomach which remains below the diaphragm.

Total gastrectomy, where indicated, has been performed but with almost prohibitive mortality because the first or second loop of jejunum often could not be brought up to the cutoff end of the esophagus without tension and subsequent leak at the line of suture. In such cases Sweet[7] has advised ligation and division of the central vessels of the jejunal loop, with reliance on the marginal vessels for circulation. By this expedient a loop which could be brought through the transverse mesocolon to a point only 1 or 2 centimeters above the diaphragm may now be brought to a level of 3 inches into the chest.

Postoperative care is very important and every effort is exerted to conserve the patient's resources. Administration of oxygen, blood transfusions, parenteral fluids, amino acids and vitamins are even more important now than preoperatively. Suction on the nasal tube and that on the thoracic drains is maintained. In view of the fact that nearly all these operations are done without clamps, there is some soiling; but infection is well borne by the pleural cavity. The liberal use of penicillin has greatly reduced the mortality from infection. Oral fluids and food are given when safety permits.

Report of Case

Mr. A. B., aged sixty, married and a cabinet maker by occupation, was a patient of Dr. Douglas Head and under his observation for several years.

Family and past history is negative except that in January 1946, the patient fell and cracked some ribs.

In March 1946, the patient was examined by Dr. Head at which time he complained of cramps in the legs, numbness in the arms and loss of pep. A vague feeling of distress in the left upper quadrant became worse on lying down. Appetite was good. There was no weight loss nor change in bowel habit. The genitourinary system was normal.

Hemoglobin was 65 per cent. Gastric expression showed no free hydrochloric acid. Total hydrochloric acid was 25. Blood and pus were present.

Roentgenograms of the gastrointestinal tract in May 1946, showed a large mass involving the cardia of stomach producing displacement of the esophagus and a probable very extensive carcinoma of the cardia involving the lesser curvature.

The patient entered Asbury hospital June 4, 1946, where the hemoglobin was found to be 56 per cent; plasma proteins, 5.8 and an electrocardiogram showed left axis deviation. He was placed on a high protein, high caloric diet. Vitamins and blood transfusions were given.

On June 8, 1946, a transthoracic subtotal gastrectomy was performed under endotrachial anesthesia given by Dr. Joseph Baird. The cut-off end of the esophagus was anastomosed with silk to the anterior wall of the stomach and the suction tube passed through into the stomach. Two rubber tubes for suction drained the pleural cavity. The operation time was almost six hours and he was given 2000 cubic centimcters of whole blood during the operation. The blood pressure was 142/75 on entrance to the hospital, 150/80 at the start and 120/60 at the end of the operation. The pulse remained under 90 throughout the whole procedure. Nasal suction was removed in six days and he took food well.

The specimen included 3 inches of esophagus, all of the lesser curvature and most of the rest of the stomach, well distal to the carcinoma, the spleen and a large piece of omentum.

The sloughing and infected neoplasm resulted in increased contamination. The chest suction tubes never drained well and he developed a wound infection and later an empyema. Penicillin and sulfa were given freely throughout most of his convalescence. The chest was repeatedly aspirated and only bloody fluid obtained. On the twenty-fourth day the real abscess cavity was encountered and bloody purulent exudate yielded Gram-positive cocci in clusters and chains. A catheter was introduced through a trochar into the abscess and the cavity irrigated with penicillin. Thereafter recovery was prompt and the patient is well and working every day. He eats well and is gaining weight slowly.

Note.—The patient was shown personally before the Society, together with x-rays before and after his operation and numerous slides photographed from published articles demonstrating different methods of technique.

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Discussion

Dr. John R. Paine: One point in the technique which Doctor Maxeiner did not stress and which has been a great help to me is not to transect the esophagus until the two posterior rows of sutures in the anastomosis have been placed. If the esophagus is not transected, it can be pulled upon and released in large measure in tension at the line of anastomosis at the time the anastomosis is being made. It is the policy of all who try to do these operations at the University Hospitals to place two posterior rows of sutures before opening the lumen of the esophagus. The esophagus is then transected in stages as the inner layers of the anterior suture lines are placed. Tension at the line of anastomosis can be relieved by anchoring the posterior wall of the stomach to the parietal pleura of the posterior wall of the chest.

The patient who Doctor Maxeiner mentioned had a carcinoma of the lower middle third of the esophagus. This man died approximately ten days after operation. When he got up out of bed, he collapsed at once. At necropsy, it was found he had a pulmonary embolism. The result of transthoracic resection of the cardia of the stomach and esophagus at the University Hospitals is not as good as any of the series of cases which Doctor Maxeiner mentioned.

As I remember, practically no operations of this type were done at the University Hospitals prior to 1941. Since that time, I cannot give you the cxact figures, but it is my impression that between twenty-five and thirty such operations have been performed. The mortality has been between 20 and 25 per cent. The chief cause of death has been separation of anastomotic suture lines. Empyema has been not an infrequent complication.

Dr. Thomas J. Kinsella: One is somewhat surprised at times at the amount of exposure which can be obtained through a trans-thoracic, trans-diaphragmatic approach to the stomach and esophagus. The stomach may be mobilized almost to the pylorus and brought up into the chest to the apex of the pleura. I now have a patient at St. Mary's Hospital, ten days postoperative, in whom I resected a carcinoma of the mid-esophagus, bringing the stomach into the chest so the anastomosis was made above the arch of the aorta. Because of the position of the tumor only a small amount of the cardia and lesser curvature were sacrificed. The stomach survives such mobilization and elevation better than the jejunum if care is exercised to protect the right gastric and right gastroepiploic vessels which must furnish its sole blood supply. It must also be fixed well up in the chest and to the diaphragm to avoid tension on the anastomosis.

The point which Dr. Paine brought up of using the lower esophagus as a retractor until the first layer of posterior sutures is placed is important. The esophagus is somewhat likc a rubber band and snaps back when released unless fixed in some way. Mattress sutures should be used as simple sutures pull out readily.

All patients subjected to thoracotomy form fluid in the pleural cavity postoperatively. If this fluid is continually removed the pleura will fuse and obliterate the space in a few hours. In all such resections there is some contamination of the pleura and mediastinum for the anastomosis is done by an open method because the blood supply of the esophagus is poor and will not tolerate clamps. Two or three catheters placed in strategic locations will with constant suction keep the fluid out of the chest and permit obliteration of the pleura and walling off of any infection. Both the pleura and mediastinum tolerate contamination well under such conditions.

Postoperatively these patients have some difficulty, dyspnea and so forth, when the stomach becomes distended, but this is a minor matter. Some have temporary difficulty with pylorospasm as the result of vagus section incident to the resection.

This approach has widened our surgical attack on carcinoma of the stomach and opened a new field in treatment of carcinoma of the esophagus in the lower and middle third, esophageal strictures and perforations previously untouched.

Another incision has been used by Sampson and others in the handling of thoraco-abdominal wounds during the recent war. It involves resection of the ninth rib with the patient in the lateral position and extension of the incision forward to the mid-line if necessary. Wide exposure is obtained with better access to the abdominal contents than with resection of the eighth rib.

These procedures are long drawn out affairs but surprisingly well tolerated considering their magnitude. Some patients may be saved in this way who cannot be handled in any other manner. Its wider use is to be encouraged, but abdominal surgeons who plan to employ this approach should give some thought to the physiology of the chest for it differs somewhat from that of the abdomen. Some of the postoperative problems and complications can be avoided by forethought and a little planning.

ANESTHESIA FOR TRANSTHORACIC GASTRECTOMY

RALPH T. KNIGHT, M.D.
Minneapolis, Minnesota

In providing anesthesia for transthoracic gastroectomy, certain requirements must be met. These requirements are quite similar to those for most transthoracic operations, but there are some differences. For most transthoracic operations, especially those involving the lungs, the lung must be collapsed for the convenience of the surgeon for a considerable part of the time. That is not so necessary for the transthoracic approach to the stomach. The lung must be collapsed, but it need be only partially collapsed. It may be packed back out of the way of the surgeon, depending upon how high he needs to work upon the esophagus and that makes little difference in the care rendered the patient by the anesthetist.

The requirements are that the physiology of the patient be kept up, that he have an adequate exchange of gases, presentation of oxygen and removal of carbon dioxide; but there must be quietness of breathing so that the structures may be handled under a minimum of motion. The special requirement in case of work upon the stomach through the thoracic cage is that while, at first thought, relaxation of the abdominal muscle is not of so much importance, in practice, and upon second thought, it becomes of rather major importance. Tension of the abdominal muscles, possibly in the effort of breathing with no aid from the diaphragm, may make a considerable amount of motion and may tend to force abdominal contents up into the thorax to the inconvenience of the surgeon. It, therefore, is even more important in this type of operation on upper abdominal organs through the thorax that the anesthetist carry on respiration for the patient with very little active motion on the patient's part, and that the abdominal muscles be relaxed; in other words, that respiration must be carried on, but general anesthesia must be deep enough so that the abdominal muscles will be relaxed. Especially during the closure of the diaphragm, this relaxation must be provided. It seems in watching the surgeon work that it is just as much of a problem in closing the diaphragm as closing the abdominal wall after an abdominal incision. That involves also the relaxation of the intercostal muscles and quietness of the thoracic wall. While carrying on this controlled respiration, of course, the lung in the open side of the chest is expanded to a certain degree with each artificial inspiration. It does not fully expand even when an amount of pressure with each filling is carried up to 10 to 12 millimeters of mercury. It expands from one-half to two-thirds of its expanded size and may be controlled very easily by a small amount of packing and use of retractors.

There is one difficulty that is sometimes encountered and that is that if there is considerable involvement by inflammation about the esophagus, while this is being freed up, it sometimes happens that the pleura of the opposite side is opened. Both lungs collapse. The patient is then, of course, unable to breath for himself at all and all of his breathing must be accomplished by the anesthetist.

One more difference between operations on the abdominal organs through the thorax and those upon the thoracic organs is that most surgeons like to use a cautery in severing the stomach, either an actual cautery or a diathermy or something of that sort. That cannot be allowed if we are using an inflammable anesthetic because some small leaks from the lungs may be present and if any of this gas should leak out from the lung into the thoracic cavity, it is very apt to catch fire and explode. This problem must be met in one of two ways. Either the surgeon must relinquish his desire to use a cautery and rely on a knife and an antiseptic or an entirely noninflammable anesthetic must be employed.

We like in transthoracic surgery to use cyclopropane. Some anesthetists and surgeons use an ether vapor. The patient's general welfare is not held at quite such a high level if ether is used. Either one is just as explosive. There is no difference. Recently we have been using sodium pentothal, curare, and nitrous oxide, using either a mixture of pentothal and curare in the same syringe which Doctor Baird has developed or using them separately in different syringes. We use nitrous oxide with high enough oxygen so that the welfare of the patient is increased over the usual nitrous oxide anesthesia and still provide enough analgesia so that the amount required of pentothal and curare is definitely reduced. By using this combination we manage to finish a long surgical procedure with an amazingly small amount of sodium pentothal and the patient is ready to wake up at the end.

The anesthetist must be right in on the operation. He must watch the operation as closely as any interested bystander must watch (even if not as carefully as the surgeon), because anesthesia and management of the physiology of the patient must be his concern. His hope is to finish with as light an anesthetic as possible at the end of the operation and allow the patient to wake up quickly so that breathing will be well carried on. The patient's lungs must be filled with helium or nitrogen and adequate oxygen and kept expanded during closure of the chest, except that it must not be fully expanded while the stitches are put into the pleura. As Doctor Maxeiner mentioned, this final lung expansion is very important as one of the means of avoiding atelectasis, which is an especially disagreeable complication following this type of surgery.

Minnesota Academy of Medicine

Meeting of October 9, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, October 9, 1946. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the President, Dr. S. E. Sweitzer.

There were fifty-five members present.

Minutes of the May meeting were read and approved.

The President announced the election of new members at the November meeting.

The scientific program followed.

ECTOPIC KIDNEY WITH HYDRONEPHROSIS

C. D. CREEVY, M.D.

Minneapolis, Minnesota

This report is prompted by the satisfactory result, after fifteen months, of a Y plasty in a young man who had been told by a medical consultant that he had polycystic kidneys and had better sell his farm so that he could lead a less active life. The unusual combination of an ectopic, incompletely rotated kidney with a stricture at the ureteropelvic juncture is also worthy of comment.

Case Report

E. M., a farmer, aged thirty-four, in the period between November 1944 and March 1945 had three attacks of severe pain in the right upper quadrant of the abdomen. Each lasted about two hours until relieved by morphine. He had lost fifteen pounds in weight.

Development and nutrition were excellent. The blood pressure was 140/80. There was an ill-defined, rounded, rather tender mass in the right middle quadrant of the abdomen. Routine studies of the blood and urine gave normal results. The Wassermann was negative, and the urea nitrogen was 19 mgm. per cent.

A plain x-ray of the urinary tract showed the right renal shadow to be somewhat enlarged and low in position. Cystoscopy disclosed a normal lower urinary tract. Clear urine was collected from each kidney. The right renal pelvis was low in position, dilated grade three, and its calices were clubbed and directed medially (Fig. 1). There was a half-inch long constriction of the first portion of the ureter, which had a high origin and followed a course like that seen in horseshoe kidney. The left renal pelvis was normal in size and position, but its calices were directed medially and its ureter, which was intrinsically normal, followed a course similar to that of the right.

It was obvious that there was a noncalculous obstruction at the right ureteropelvic junction, probably due to a congenital stricture. Since the kidneys were so far apart, it seemed likely that the patient had an ectopic, incompletely rotated right, and a normally placed but incompletely rotated left kidney. A plastic operation upon the right ureteropelvic junction was advised.

He returned on June 26, 1945, because of recurrent attacks, the end of the spring planting season, and the advice of his physician.

The right kidney was explored at St. Barnabas Hospital on June 28, 1945, under spinal anesthesia through a low lumbar extraperitoneal approach. There was a low lumbar ectopy with failure of rotation, a sizable anteriorly placed extrarenal hydronephrosis, and a stricture at the ureteropelvic junction which lay upon the anterior aspect of the lower pole of the misshapen kidney.

After a typical Schwyzer-Foley Y plasty and nephrostomy, the kidney was rotated so that the pelvis lay medially, and was sutured in this position. The low origin and shortness of the renal vessels prevented moving the kidney to a higher location. Recovery was retarded by a wound infection, but he was discharged on July 25, in good condition.

He returned on August 9, 1945, because of persistent drainage of pus from the wound. Pale, unhealthy granulations protruded above the surface about the site previously occupied by a penrose drain. These were excised with scissors and moist heat was applied. An excretory urogram showed striking improvement in the hydronephrosis (Fig. 2). Indigo carmine given intravenously did not appear in the wound.

Microscopic examination of the removed tissue showed chronic inflammation; culture yielded aerobacter aerogenes. He was dicharged on August 16 with the wound healing rapidly.

On November 16 the wound was healed, the urine was clear, and he had no complaints. He returned for checkup again on August 29, 1946, without complaints. The urine was microscopically normal, and the urogram showed diminution of the hydronephrosis, return of the calices toward normal, and a funnel-shaped ureteropelvic junction.

Discussion.—The kidneys develop low in the sacral region, in which position the pelves lie anterior to the renal substance. Early in fetal life ascent begins and is accompanied by rotation; both processes end normally with the kidney beneath the diaphragm and the pelvis lying medial to the renal substance. Arrest either of ascent or of rotation, or of both, may occur at any point between the fetal and definitive adult positions. Contact between the two kidneys during ascent results in some form of fusion (horseshoe, L-shaped, sigmoid unilateral fused kidney).

In 37,500 autopsies Bell found ectopic kidneys once in 750 cases. The two sexes were affected about equally; the right side was involved a little more often than the left. Six per cent were bilateral. Crossed ectopy, with or without fusion, is very rare.

The ectopic kidney, despite statements to the contrary, is not *per se* more subject to disease than the normally placed organ, although its vascular supply is often abnormal, a fact which may lead to hydronephrosis from compression of the ureteropelvic junction by anomalous blood vessels. A pelvic kidney may interfere with labor.

According to Bell, hydronephrosis is the commonest renal disorder found at autopsy (3.8 per cent of 32,360 cases excluding those due to stone). Of all the hydronephroses in the series 2.1 per cent were due to noncalculous obstruction at the ureteropelvic juncture; 69 per cent of these resulted from strictures at the uretero-

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From the Urological Division of the Dept. of Surgery in the Medical School of the University of Minnesota.

pelvic juncture. Other causes of obstruction at this level include accessory blood vessels, distortion of the juncture by sheets of peripelvic fascia, ptosis, inflammatory mucosal polyps, neuromuscular dysfunction, and various combinations of these factors.

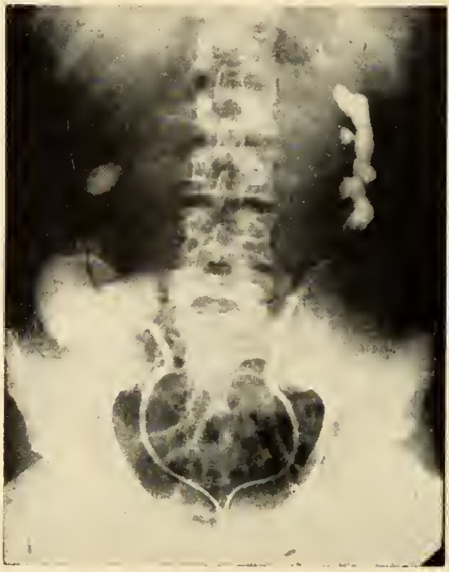

Fig. 1.

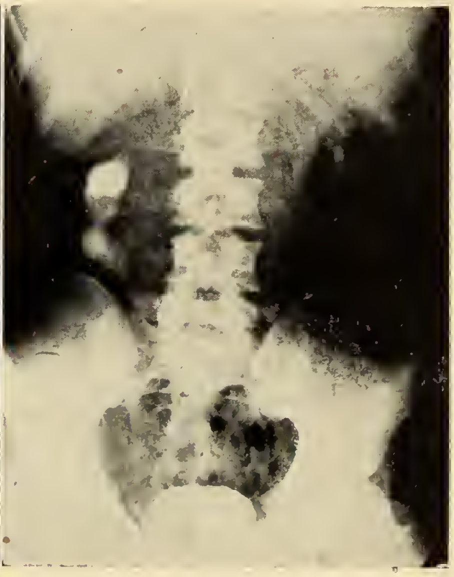

Fig. 2.

Thus we have in the patient under discussion a combination of unusual anomalies: lumbar ectopy, malrotation, and a stricture at the ureteropelvic junction. The striking degree of hydronephrosis with a palpable, tender mass in the right renal area obviated the not uncommon mistake of assuming that a kidney which is normal except for position is causing pain.

Treatment involved two problems: relief of the obstruction and placement of the kidney in as normal a position as the length of its blood vessels would permit. The Schwyzer-Foley Y plasty was chosen because it does not interrupt the continuity of the pelvis and ureter (thus permitting the normal downward progress of peristalsis after operation); because it restores more or less normal relationships between pelves, ureter, and kidney; and because good results have followed its use in a high proportion of my personal series of fifty-eight cases.

Placing the kidney in a normal position is desirable but not essential to a satisfactory result. It is, of course, too soon to classify this patient as permanently cured, but the fact that he has remained free of symptoms for more than a year, coupled with the spontaneous clearing of the postoperative pyuria, and the diminution of the hydronephrosis are all favorable signs. The superiority of preservation of a kidney with almost normal function over nephrectomy in a young man needs no emphasis.

Discussion

Dr. W. F. Braasch, Rochester: Dr. Creevy has reported an interesting type of renal anomaly, namely, an ectopic kidney with malrotation and obstruction at the ureteropelvic juncture. What is of even greater interest is the fact that he succeeded in doing a plastic operation at the ureteropelvic juncture and that a year later he discovered the kidney to have normal function.

It has been my experience that ectopic kidney quite frequently is accompanied by pathologic lesions. In fact, in the majority of cases the urographic evidence may show either malrotation, pyelocaliectasis, pyelonephritis or atrophy. In many cases the renal function is reduced to such an extent that urographic visualization is either absent or very dim and the condition may be easily overlooked in the excretory urogram. When there is obstruction at the ureteropelvic juncture, with intrapelvic retention of urine, the resulting pain may be easily confused with that caused by a diseased appendix. In several cases observed at the clinic the appendix had been previously removed. Dr. Creevy deserves credit because of the excellent results obtained in this case, since the concomitant malrotation, chronic infection and reduction in function often will not permit such excellent results.

I would like to show a series of urograms illustrating the various complications in anomalies of this type, which include the following lesions: pyelectasis, incomplete rotation, bilateral ectopy and stone in ectopic kidney. The kidney may be described as ectopic in case of crossed renal ectopia.

Dr. T. H. Sweetser, Minneapolis: I enjoyed Dr. Creevy's excellent presentation and especially the result of his conservative treatment. I think that is what we should try to accomplish—relief by some conservative measures.

The case I wish to call to your attention was a psychoneurotic patient with pains referred to different systems and treated by various doctors. We were called in consultation at Minneapolis General Hospital in April 1941 because of the presence of pain in the right lower abdomen. Her pain was reproduced at cystoscopy by filling the right renal pelvis for pyelography. Pyelograms showed hydronephrosis of the right ectopic kidney located at the brim of the bony pelvis with short ureter. On exploration, the vessels supplying the kidney came from the iliac artery as well as the aorta. Nephrectomy had to be performed. She is free of pain and of urinary symptoms but has been treated for neurasthenia.

Dr. P. F. Donohue, Saint Paul: Dr. Creevy's presentation of this case was most interesting. Relief of obstruction at the ureteropelvic junction by a type of pyeloureteroplasty which preserved the continuity of the ureter provided an excellent result. Preservation of the continuity of the ureter is certainly desirable but may not always be feasible. In occasional cases, it may be necessary to sever the ureter from the renal pelvis as in the case of obstruction due to stricture when the tissues are extremely thin. It may be required when it is desirable to move the ureteropelvic junction away from the compression effects of renal blood vessels which supply large areas of the kidney and, therefore, must be preserved. Anastomosis of the cut end of the ureter to the pelvis is then performed in a manner to provide a widely opened junction. In a recent case of stricture this method led to a good result and can be recommended in properly selected cases.

REMARKS ON POLIOMYELITIS

MAURICE B. VISSCHER, M.D.
Minneapolis, Minnesota

An epidemic of infantile paralysis is more than a medical emergency in Minnesota. It is a social and political problem as well. There are many reasons for its social implications. The recorded case incidence is more than one per thousand of population and the mortality rate has been 6 per cent of recorded cases. In any case an epidemic of this magnitude of a serious disease would cause great alarm. In the case of infantile paralysis the public reaction has been heightened because of the great publicity which has centered around the disease for a number of years.

A past mayor of Minneapolis hitched his political wagon to the rising star of an Australian physiotherapy nurse who came to the city offering to handle the infantile paralysis problem. It is a misfortune that a few years after she came here the city and state suffered its worst epidemic of all time and a large number of victims have died. Ex-mayor Marvin Kline is now an officeholder in the Sister Elizabeth Kenny Institute.

The present mayor, Hubert H. Humphrey, was unwilling to be stampeded into an unscientific approach to the poliomyelitis problem and recognized that prevention rather than palliative treatment was the ultimate pressing need. He saw that in a disease with a death rate of 6 per cent the first problem was not physiotherapy, great as its value may be at the present time. He therefore established the Minnesota Poliomyelitis Research Commission, with active students of preventive medicine, immunology, pharmacology, neuropathology, physiology, pediatrics and internal medicine undertaking a comprehensive study of the 1946 Minnesota epidemic and of every possible means to prevent its recurrence. This Commission is now hard at work analyzing the 1946 cases and pressing for solutions to the major unsolved problems. The problems of greatest importance seem to me to be: (1) determining the mode of spread of the disease; (2) determining the portal of entry; (3) ascertaining the factors that determine susceptibility; (4) finding useful chemical agents influencing the susceptibility to, and the course of, the disease; (5) elucidating the mechanism of death and finding better methods for its prevention; and (6) improving methods of treatment and rehabilitation. The treatment of the acute phases of poliomyelitis has been very largely neglected by most workers, yet it is of the highest importance, as is evident when one looks at the death rate and when one sees the emotional problems of parents and relatives, and the clinical problems of the patients themselves in an epidemic.

Poliomyelitis is a medical problem of front rank importance only in epidemic situations. Then, however, it is a crucial emergency. The time to work at its solution is not so much during epidemics, although it is essential that many epidemics be studied to learn about the epidemiology, pathogenesis and clinical history of the disease. But the great body of experimental work must be done as a long-time, carefully planned and executed program. This is the objective of the Minnesota Poliomyelitis Research Commission.

Dr. Edwin F. Robb, Minneapolis, then presented his Inaugural Thesis.

ENURESIS

EDWIN F. ROBB, M.D.
Minneapolis, Minnesota

Early medical literature is filled with voluminous reports concerning enuresis, its causes and its cures. Many and varied were the etiological suggestions, the chief of which seem to have been weak kidneys, irritable bladder, too much sleep, not enough sleep, bad behavior, phimosis, and pinworms. The remedies suggested ranged from a wide variety of drugs and elaborate electrical equipment to bribery, ridicule, punishment, and hypnotism.

Most of our advances in pediatric urology have been made during the past twenty years. Helmholz has contributed greatly to our knowledge and conception of infections of the urinary tract. Campbell, White, and many others have been able through the use of improved miniature cystoscopes to add invaluable information concerning pathology of the urinary tract. The roentgenologist, too, has contributed his share with the introduction of excretory or intravenous pyelography and improved roentgenological technique.

With this tremendous increase in information it is only natural that enuresis is viewed in an entirely different light than it was a few years ago. It is no longer considered merely a passing phase of childhood and one that will surely take care of itself as maturation occurs; it is now viewed as a distinct entity, or, at least, as a symptom of an underlying condition that must not be ignored, one that, if allowed to continue, is not only unpleasant, inconvenient, and embarrassing, but may lead to serious psychological, social, and even physical damage to the individual.

That enuresis is not just a disease of childhood is amply proven by Shilonsky et al.,[5] Thorne,[8] and others in reporting on the large amount of enuresis in the recent armed forces. Thorne[8] found that of 1000 consecutive inductees examined 161 had wet the bed until five years of age or over, and that twenty-five or 2.5 per cent of the 1000 men were still enuretics, and unfit for military service. Most of these were in the eighteen- to nineteen-year-old group, but the oldest was thirty-three years of age. Shilonsky,[5] in reporting on 100 cases of enuresis in the Army, found that most of the men had had inadequate care when younger. Most of them had come from rural districts, and had been compelled, as children, to use out-door toilets. Many of them came from large families of limited means, and there was frequently a history of brothers and sisters that also were bed wetters. Furthermore, practically all of them had long since discontinued seeking medical advice because they had received no help. Since adults would naturally be reticent about discussing this situation with their physicians, his conclusion that enuresis is much more common in the adult population than is commonly supposed, seems entirely logical.

The act of urination in an infant is purely a reflex, but in time sufficient maturation occurs for the infant to develop sensations and conditioned reflexes for urinary control. The time that this occurs is influenced by many factors, but in the average child seems to occur at about two and a half years of age for day and three years for complete night control. European observers place these ages at a somewhat lower level. Certainly, if complete control has not occurred by the end of the third year, a diagnosis of enuresis should be made, and a sincere effort be made to correct the situation.

Since it is well agreed that 90 per cent of enuresis may be classified as functional and 10 per cent as due to organic lesions, most of which are of the urinary tract, it is only natural that attention should be directed to the larger group first.

Possibly the first consideration should be an investigation of the child's intelligence. There is much evidence to show that as intelligence goes down, the percentage of enuresis rises. However, there is also ample data to prove that bright and alert children are too frequently afflicted. Despert[3] in a well-controlled study on sixty children in the Payne Whitney Nursery School (all with above-average intelligence) showed an enuretic incidence of 23 per cent. Stockwell and Smith[7] in a study of 100 enuretics with an average age of nine years found 70 per cent to be of average intelligence, with 15 per cent above average and 15 per cent below. Enuresis is usually thought to be more common in the high-strung, nervous type of child, yet Despert[3] found that infants that were alert and reacted most to wet diapers, et cetera, usually had early psychomotor development and early bladder training while those with relatively late psychomotor development had late bladder training. This latter group all ate well, gained well, slept quietly, and were confirmed thumb suckers. It would seem that the lowered intelligence factor has been overemphasized. There is usually little difficulty in housebreaking domestic animals, so with patience and some effort, children of lowered intelligence should be easily taught bladder control.

We have ample proof that an untold number of psychological and psychogenic factors are to be found with a group of enuretics, and that the aid of a psychiatrist is invaluable. Fifty-two per cent of Stockwell and Smith's[7] 100 cases were found to be of a psychogenic nature, and were treated by a psychiatrist. Of these, forty-six were improved or cured. If all the lesser emotional and behavior problems are included in this group, the percentage would undoubtedly be much higher than 52 per cent; yet one wonders if many of the emotional and behavior problems in the mother as well as in the child might not result from the bickering, scolding, and ridicule that so often accompanies enuresis. In studying the histories of several hundred cases of enuresis, one fact stands out more clearly than all others. In fact it seems to be present in some form in all cases. Namely, some mistake or neglect in the original bladder training program of the infant. This may be in the choice of time to initiate the program, the method or consistency of carrying it out, the handling of emotional problems that arise, et cetera. Perhaps in our search for the etiology of enuresis, we have been unable to see the forest for the trees. It seems quite possible or probable that the greatest single contributing cause of enuresis is nothing more that the lack of a definite and intelligent training program for the infant. If true, the fault lies squarely on the doorstep of the pediatrician and the family physician. Rarely does he take the time to outline a good training regime, and emphasize the importance of carrying it out completely and consistently. This is usually left for mothers to learn from various magazines and from relatives and friends. The author readily admits his negligence in this matter, and finds upon discussion of the subject with several other pediatricians that they, too, are equally guilty.

While there are many instances of infants being trained, and with no relapses, in the very early months, it seems reasonable to assume that training should not be attempted until there is sufficient maturation of structures involved to insure a reasonable prospect of success. Statistical data seem to dictate that this time should be not earlier than the eighth month of life nor later than the twelfth month. Best results will be obtained if the training is done by the one person that elicits the most favorable reactions generally in the infant. This is, of course, in most cases the mother. A chair close to the floor where the infant feels secure, in a bright cheerful spot, with a smiling and encouraging mother in attendance is of the utmost importance. Little can be gained if the child is resisting and unhappy. Many methods have been used for training, but the one most likely to succeed is for the mother to put the child on his chair at regular intervals during the day, gradually lengthening the intervals as the child learns control. Accidents are bound to occur, and should be passed over lightly while much praise should accompany successful performance. Diapers should be discarded at this time, and the fact must be recognized that the training of boys requires more patience than does the training of girls. This is due to the fact that boys require two training periods, first in the sitting position and again in the erect position. This may in part account for the supposedly higher incidence of enuresis in boys than in girls.

Night training should not be attempted until daytime control has been attained. When this daytime conditioned reflex is completely established it will tend to carry over into the subconscious mind of the child asleep. Dryness at night can be encouraged by giving milk to the child after his afternoon nap, and by giving a supper relatively low in liquids. If the child is consistently wet at night he should be taken up before the expected time for urinating, but he should be awakened completely, not placed on his chair in a semi-conscious condition. To do this is but to train him to urinate in his sleep. Here again the interval of time should be lengthened as rapidly as possible until it is no longer necessary to awaken him. Our goal, we must remember, is to go through the night without urinating, not merely to have a dry bed.

This may sound elementary to us, but it is of the utmost importance to check every detail with the mother, for this procedure requires a mother or a nurse that is completely convinced of its necessity and one who is patient and willing to follow through with the program. It is sometimes helpful to use an alarm clock to awaken the child at night. The ringing of the clock, or rather the realization by the child that the alarm will awaken him, may speed the development of subconscious inhibitory control. If, however, with intelligent and conscientious effort on the part of the mother or nurse, the physician, and, if need be, the psychiatrist, full continence is not attained by the time a child is four years of age (five years at the latest) one must consider the very likely possibility that an organic lesion is responsible, and enlist the aid of the urologist and roentgenologist.

While it is true that only 5-10 per cent of enuresis is due to organic pathology, it is with this group that we should be most concerned. Even minor organic lesions may eventually lead to serious renal changes and chronic disturbances of micturation in the adult.

Since Campbell's report[2] in 1937 there have been many excellent contributions to this subject by urologists both here and abroad. There is no longer any doubt that a wide variety of organic lesions of the urinary tract are to be found in children, and have, in many cases, proven to be the underlying cause of enuresis. For the most part these lesions are either infections or obstructions or both. In many cases with infections the urine is not only negative microscopically, but will be culture negative as well. Complete and careful urological examination becomes essential as the only means of a definite diagnosis. White[9] emphasizes the importance of looking for minor lesions, especially in the urethra, and feels that failure to find them may account for the majority of so-called failures in treatment. This seems reasonable since we know that psychic influences such as the sound of running water, or the proximity of a toilet has a very much greater effect on the patient with a cystitis or urethritis than on one with a normal urinary tract.

Campbell[2] in 1937 reported a series of 700 children suffering from persistent enuresis. Cystoscopic and urethroscopic examination revealed an amazing amount and degree of pathology. He concluded, "that complete urological examination should be performed if enuresis persists after three to four months of good medical and psychiatric care; that all urological procedure can be carried out in children, and that in many ways they are tolerated better than in the adult." He points out, however, that excretory urographic study should be done first even though in his experience diagnostic help was obtained in only 50 per cent. Spence and Moore[6] in 1939 reported a series of fifty female children from three to fourteen years of age, either with acute pyuria or a history of previous pyuria, 20 per cent of whom were enuretics, 76 per cent showed a chronic urethritis, and in many there was a diminution in the size of the urethra and a loss of its elasticity.

White[10] in 1941 reported a study of 310 cases of enuresis in children at the Princess Elizabeth of York Hospital in London. He emphasized the importance of infection as an etiological factor in enuresis, although only 15 per cent of his cases showed any evidence of infection in the urine. Sixty per cent of his cases were female and 16 per cent definitely followed infectious diseases such as measles, scarlet fever, et cetera. Twenty-seven per cent of the boys in this series showed inflammation and constricture of the external urinary meatus. In girls the external urinary meatus was seldom constricted, but adjacent local inflammation was usually present. Of 220 cases with cystoscopic and posterior urethroscopic examination, 70 per cent showed evidence of inflammation on the front of the trigone and at the internal urinary meatus. Of 150 cases with intravenous urograms, 60 per cent showed variations from the normal in the upper urinary tract, all of which were minor but important as indicating early changes due to inflammatory processes below. White treated this series by dilatation of the urethra, and reported benefit in some degree for 97 per cent. Eighty per cent benefited by one treatment only, 55 per cent ceased to have enuresis for from three months to two years, and 42 per cent continued to have enuresis, but were much improved. Meatotomy was necessary in 70 per cent of the cases in order to pass a sufficiently large sound.

Higgins,[4] too, emphasized the importance of a careful examination of the vulva and urethra in girls, and the external urinary meatus and urethra in boys for signs of inflammation or obstruction, both of which he felt to be a common cause of enuresis.

Brodny and Robins[1] in an excellent article in the *Journal of the A.M.A.* in 1944 recognized the value of early and complete urological study of enuresis. They emphasized the value and advantage of cystography and urethrography over other methods of urological examinations. They believe that it is not only much easier and safer, but in many ways more valuable, since it can be done on younger children and repeated if necessary to watch the progress of a lesion. They also emphasize the necessity of teamwork between the pediatrician or family physician, the psychiatrist, the roentgenologist, and the urologist if the best results are to be obtained in the diagnosis and treatment of enuresis due to organic lesions of the urinary tract.

During the past few years I have sought urological help on a small number of cases of persistent enuresis. They were referred to the late Dr. Ernest Meland, who was very much interested in this subject. Unfortunately there is no record of those patients who failed to show pathology of the urinary tract, but my impression is that the number was small, since most of the group consisted of older children that had resisted all medical and psychiatric treatment.

I should like to present briefly nine cases in which definite disease was found, and to thank Drs. Creevy, Webb, and Smith for making these records available to me. Two of this group of patients have moved from the city, and the end results of the treatment are unknown.

Case 1.—S. S., female, aged twelve, had a history of diurnal frequency and nocturnal enuresis. Cystoscopic examination revealed a granular urethritis, grade 2. Internal sphincter, bladder, and ureteral orifices all appeared normal. Both ureters were catheterized, and specimens collected. Cultures from the kidneys and bladder were negative. Kidneys, ureter and bladder were normal.

Diagnosis: Granular urethritis.

Note: this patient moved out of town in a few weeks, and has not been followed.

Case 2.—C. P., male, aged twelve, had severe eczema as a baby and frequent colds with spasmodic bronchitis. Severe pertussis at seven years, after which he developed severe attacks of asthma and persistent and severe enuresis. Dr. Meland dilated this boy's urethra, and instilled 1 per cent silver nitrate. There was no improvement and two months later he was readmitted for urological study. Cystoscopic examination revealed a normal urethra, but there was hypertrophy of the veru, grade 2, and a marked redundancy of the mucosa at the vesical neck producing an obstruction. Ureteral orifices were normal. The verumontanum was fulgurated down smooth, and the mucosa at the vesical neck was fulgurated by means of strip cautery. A No. 12 catheter was left in the bladder for two days.

Note: For three to four months this patient wet his bed occasionally, but for the past three years he has had no enuresis.

Case 3.—F. B., male, aged ten, had had persistent enuresis since infancy with microscopic hematuria at times. Cystoscopic examination revealed a flap in the urethra attached to the distal portion of the verumontanum, and acting as a valve. K.U.B. and all other findings were normal. The flap was destroyed by fulguration. Diagnosis: Posterior urethral valve.

Note: There was no apparent improvement in the enuresis for one year, at which time it ceased and the patient has had no trouble for two years.

Case 4.—S. H., male, aged seven, had had persistent enuresis since infancy. Cystoscopic examination revealed a normal anterior urethra. In the prostatic urethra there was some lateral lobe intraurethral fullness at the vesical orifice with four slight longitudinal bands radiating from the apex of the verumontanum to the vesical neck producing some constriction at the neck. Around the posterior half of the urethra just below the verumontanum was a shaggy inflammatory collar. The bands in the posterior urethra were fulgurated, strip fulguration was applied to the lateral lobes at the vesical neck, light fulguration of the veru, and the inflammatory collar described was destroyed. Kidney ureter and bladder examinations gave negative findings. A No. 12 catheter was left in for twenty-four hours.

Diagnosis: Posterior urethral valve and hypertrophy of the verumontanum.

Note: This boy was much improved, but was still wetting his bed occasionally when he moved from the city six months later.

Case 5.—L. T., female, aged five, had had enuresis since infancy with diurnal frequency the past two years. Cystoscopy revealed polypoid granulations in the region of the internal sphincter. The bladder was normal. Kidney, ureter, bladder examinations and intravenous urogram showed a normal condition. The urine was microscopically negative, but colon bacilli were found on culture.

Diagnosis: Urethritis and Bacilluria.

Note: This patient has not been seen since hospitalization four years ago. It is therefore assumed that treatment was unsatisfactory. The patient was an only child and the mother was extremely neurotic. She was a greater problem than the child.

Case 6.—M. B., female, aged three, had had enuresis and some diurnal incontinence. There was no history of urinary infection. Cystoscopy was normal except for some inflammatory tags and redundancy of the mucosa in the proximal urethra. A K.U.B. was normal. The urine was normal on culture. The tags and mucosa were fulgurated. This patient was readmitted to the hospital two months later. Dr. Meland's note at this time was as follows: "There was marked improvement for a time, but there has been some recurrence of her symptoms." Cystoscopy again revealed a redundancy of the mucosa with tags in the distal urethra. These tags were fulgurated.

Note: The patient again showed improvement for a time, but now, two years later, has occasional diurnal incontinence and nocturnal incontinence two to three times a week.

Case 7.—K. S., male, aged ten, had had persistent enuresis since infancy. Cystoscopy revealed a hypertrophy of the verumontanum which practically filled the posterior urethra, and there was a moderate redundancy of the vesical neck; otherwise it was normal. K.U.B., et cetera, were negative. The veru was fulgurated, there was a strip cautery of the mucosa at the vesical neck in four quadrants.

Note: The mother states that there was no improvement in this boy's condition for one year. During the next two years there was gradual improvement. For the past two years he has had no trouble.

Case 8.—V. T., female, aged six and one half, had suffered from recurring urinary tract infections and persistent enuresis. The infections responded nicely to chemotherapy, but would recur. K.U.B. was negative, and intravenous pyelogram was normal. Cystoscopic examination was negative except for a urethritis, grade 2. The urethra was dilated to No. 18 French sound and 1 per cent silver nitrate applied to the urethra.

Note: There was no improvement in symptoms, and she has for the past three years been under the care of another physician. The mother reports that there is still no improvement in the enuresis.

Case 9.—S. S., Jr., male, aged nine, had had enuresis and diurnal frequency since infancy. He was the older of two children, and came from a fine, intelligent family. He had become such a behavior problem that he failed constantly in school, had no friends in the neighborhood, and was simply impossible in every way. He had good psychiatric help, and was placed in a new school without benefit. Cystoscopy was negative except for an hypertrophy of the verumontanum that practically filled the posterior urethra and a redundancy of mucosa at the vesical neck. The veru was fulgurated down smooth, and strip cautery carried out in four quadrants in the vesical neck. A No. 12 catheter was left in for twenty-four hours.

Note: This boy showed immediate improvement. He wet his bed occasionally for one month, but has had no enuresis for the past five years. His entire personality has likewise changed. When enuresis ceased, the behavior problem disappeared. His school work has been good, and he can be considered a normal boy in every way.

Comment

Obviously no conclusions can be drawn from such a small series of cases, their chief function being merely to stimulate one's further interest in the subject. It might be noted, however, that there were four girls in this group and five boys. The girls all showed evidence of inflammatory changes in the urethra, and culture of the urine was positive in two of them. Fulguration of granulations and redundant mucous membrane was done in two girls. Results in all four of the girls treated were unsatisfactory. Perhaps better results would be obtained in treating enuresis in girls if we treated them in much the same manner as one would treat a persistent pyuria.

In the boys, urine culture was negative in all. Four showed hypertrophy of the verumontanum, four showed redundancy of the mucous membrane in the posterior urethra, and two showed definite posturethral valves. Fulguration of the obstructive lesions was done in all five with apparent improvement in all. One was completely cured, and three were either much improved or completely cured after periods of from three months to one year. Since all other treatment had failed in these boys for many years, it seems reasonable to assume that removal of the obstructive lesions had a part in their eventual cure.

It has been impossible, in the time allotted me, to go into many phases of the diagnosis and treatment of enuresis. Simple urological procedure such as determination of residual urine, bladder capacity, et cetera, may give invaluable information. Likewise many drugs have therapeutic value. Of these ephedrine and atropine probably take first rank, but even these can be used more intelligently and effectively following a complete urological examination.

Summary

In summarizing we seem justified in the following conclusions:

1. Enuresis is a serious medical problem, and deserves careful study.
2. It is not only a pediatric problem, but may be one for the internist, psychiatrist, roentgenologist and urologist as well.
3. The best cure for enuresis usually lies in its prophylaxis. More attention to bladder-training programs for infants is definitely necessary.
4. Organic lesions of the urinary tract must always be suspected, and urological investigation instituted in those cases refractory to good medical and psychiatric care.

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Discussion

Dr. C. D. Creevy, Minneapolis: I believe that all of these patients whom Dr. Robb has discussed were seen by Dr. Meland. I have enjoyed Dr. Robb's paper very much. It seems to me that the pediatrist must cure most of the cases of enuresis because I see very few.

The problem is simpler in the male than in the female. From the urologic point of view one can divide enuresis into two main types: The functional, and the organic. The functional type can be divided into two subgroups: the sound sleepers, and the malingerers or psychiatric problems.

Most of those whom I see appear to be sound sleepers. The children have trouble only at night. The urine is normal and the urological investigation shows nothing abnormal. One can relieve most of these patients with the Cunningham clamp or the Foley artificial sphincter. If the child and parents are co-operative, the device needs to be used only for a comparatively short time after which a habit seems to be established, and the difficulty straightens around.

The malingerers are those patients who can be recognized readily by an interview. Characteristically, the child or the mother, or both, are resistant to and rather resentful of, all suggestions and betray this fact by their attitude. These people, of course, belong in the hands of the psychiatrist.

Patients in the organic group are troubled day and night. Dr. Robb has covered this group pretty thoroughly. It includes patients with lesion of the nervous system, such as spina bifida, spina bifida occulta, and various other congenital disorders; those with local irritative lesions in the urethra; and an occasional patient with an ectopic ureteral orifice. This last group consists entirely of girls.

One serious problem from the point of view of the urologist is the difficulty of examining the prostatic urethra satisfactorily in an infant or young boy. The cystoscopes are so small that the objective of the telescope, and the light, necessarily come too close to the mucous membrane of the prostatic urethra, which then tends to shut off the light by the objective so that vision is relatively poor.

Dr. W. F. Braasch, Rochester: I appreciate the opportunity of hearing, not alone the thorough review of the subject of enuresis by Dr. Robb, but also the excellent discussion by Dr. Creevy. I can add very little to Dr. Creevy's remarks. I might say, however, that the urologist has for a long time recognized the existence of etiologic factors of enuresis such as Dr. Robb has cited, but apparently the pediatrician has not. In fact, Dr. Robb is the only pediatrician to my knowledge who recognizes the frequent existence of urologic lesions to account for enuresis and who has written a paper describing them. I trust that he will read this paper before pediatric societies so that his colleagues may be influenced to look for the lesions in the urinary tract which he has described.

Although many cases of enuresis undoubtedly are of a functional nature, the possibility of an organic lesion must be considered, particularly if the symptoms persist beyond the age of puberty. There is one lesion which I would like to mention particularly, namely, dysfunction of the muscles at the neck of the bladder. This lesion is characterized by relaxation of the muscles in this area extending into the adjacent urethra, and it usually can be recognized on cystoscopic examination. Another lesion which always should be excluded is a pin-point meatus at the external urethra. It is not an infrequent cause of enuresis.

The treatment of functional enuresis mentioned by Dr. Creevy is an excellent one, namely, the penile clamp. This has been applied in several cases to my knowledge, with excellent results.

Dr. T. H. Sweetser, Minneapolis: I was glad that Dr. Robb mentioned the training of the parents. In the cases I have seen, the training of the parents and improvement of the environment at home have been important aids in the care of the patients. Hospitalization as a means of changing environment has sometimes helped. Dr. Creevy and Dr. Robb have covered the subject well, but there is just one point I want to emphasize.

Dr. Robb mentioned the importance of urinary infection. After removing any obstructions, local treatment of the posterior urethra and chemical treatment of the infection will clear up the difficulty. But many urinary infections are treated only until symptoms are relieved and urine has become clear; the trouble then recurs with the first intercurrent infection or lowering of the patient's resistance. The infection should be treated until the urine is sterile by culture to give the best chance of permanent cure.

Dr. Alexander Stewart, Saint Paul: I think a good deal as Dr. Robb does about the importance of the functional side. I had a boy in the office this afternoon who has just recovered from polio; while he was in bed for three weeks with polio he never wet the bed, but as soon as he was released from quarantine he started again having enuresis the same as before his illness.

I wish to congratulate Dr. Robb on his fine thesis and I believe that from now on I will refer more of my patients who do not respond to general and psychiatric treatment to the urologist for investigation.

Dr. Robb, closing: I wish to thank my discussants for their generous words. Undoubtedly, most cases of enuresis are functional in origin, but I wish to emphasize again the importance of searching for organic causes. We have, I think, been very negligent in our institution of bladder-training programs. Obviously, we do not want to create a behavior problem as well, but it is amazing how easily many children are trained when this program is started when the infant is only ten or twelve months of age.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary*

Because of peculiarities in its pathology and epidemiology, tuberculosis, especially the pulmonary form, has attained world-wide prevalence. The mode of transmission is simple, and while there are great variations in susceptibility, no class or subdivision of mankind is immune. These peculiarities make it reasonably certain that no nation could eradicate the disease and by artificial barriers prevent its introduction from without. Even if such procedures were theoretically possible, the limitations which they would place upon travel and commerce would make them impracticable.—James A. Doull, M.D., NTA Transactions, 1946.

WOMAN'S AUXILIARY

Blue Earth County

The Blue Earth County Medical Auxiliary entertained the Redwood-Brown and Nicollet-LeSueur auxiliaries on December 7.

After a joint dinner with their husbands at the Saulpaugh Hotel, the fifty wives were guests at the home of Mrs. Roger Hassett.

Mrs. Roger Engel spoke on Germany, and Mrs. Walter Kaufman reported on the State Board Meeting held in Saint Paul, December 6. Mrs. Kaufman was appointed chairman of the Blue Earth County Cancer Society.

Business meetings of the three county organizations were held after the program. Mrs. George Penn presided in the absence of Mrs. Troost, the president.

Hennepin County

The Hennepin County Medical Auxiliary held its annual Christmas party in the Medical Arts Lounge, December 6.

Mrs. Jessie D. Hamer, Phoenix, Arizona, president of the Women's Auxiliary to the American Medical Association, and Mrs. Melvin S. Henderson, Rochester, Minnesota, state president, were guests of honor.

Reading of the play, "The First Christmas Tree," was given by Mrs. Leonard Arling, followed by a program of Christmas music.

Mrs. Elmer O. Dahl and Mrs. Arthur A. Wohlrabe were tea chairmen for the day.

Olmsted-Houston-Fillmore-Dodge Counties

The Olmsted-Houston-Fillmore-Dodge County Auxiliary again sponsored the Christmas Seal essay contest in the Junior and Senior High School in Rochester, awarding a $5.00 prize for the best original essay in each age group. The Auxiliary also aided in the sale of Christmas seals by staffing booths in the downtown hotels.

Mrs. B. M. Black is directing the collection of medical and surgical instruments and medical supplies to be sent overseas to the needy.

Dr. A. W. Adson addressed the auxiliary on the "Minnesota Plan for Pre-payment Medicine," at the fall meeting. A tea and social hour followed.

Wright County

The Wright County Medical Auxiliary held its fall meeting October 14 at the home of Mrs. W. P. Anderson, Buffalo.

Bandages were made for the Cancer Society, and the auxiliary subscribed to *The Bulletin.*

A turkey dinner was served to the members and their husbands by Mrs. John J. Catlin of Buffalo.

The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and states.—Constitution of the World Health Organization, U.N.

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SEARLE

RESEARCH IN THE SERVICE OF MEDICINE

Reports and Announcements

MEDICAL BROADCAST FOR JANUARY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Service Association in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association, and the University of Minnesota School of the Air.

2— 4:45 P.M.	WCCO	Cause and Spread of Infantile Paralysis
4—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
7— 4:45 P.M.	WCCO	Diagnostic Hospital Equipment
8—11:00 A.M.	KUOM	Foods Undergo Many Changes in the Body
9— 4:45 P.M.	WCCO	Treatment of Infantile Paralysis
11—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
14— 4:45 P.M.	WCCO	The Nurse and Public Health
15—11:00 A.M.	KUOM	The Blood Travels in a Continuous Stream
16— 4:45 P.M.	WCCO	Results of Infantile Paralysis
18—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
21— 4:45 P.M.	WCCO	Treatment Hospital Equipment
22—11:00 A.M.	KUOM	Waste Materials Are Removed from the Body
23— 4:45 P.M.	WCCO	The Common Cold
25—11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
28— 4:45 P.M.	WCCO	Visiting Nurse
29—11:00 A.M.	KUOM	Sunlight and Fresh Air Are Health Essentials
30— 4:45 P.M.	WCCO	Mouth Problems of Advancing Years

AMERICAN ACADEMY OF ARTS AND SCIENCES OFFERS FRANCIS AMORY PRIZE

In compliance with the terms of a gift under the will of the late Francis Amory of Beverly, Massachusetts, the American Academy of Arts and Sciences offers a substantial prize for outstanding work addressed to the alleviation or cure of diseases affecting human reproductive organs. The gift provides a fund, the income of which may be awarded at seven-year intervals "as a prize and gold medal, or other token of honor or merit," to any individual or individuals for work of "extraordinary or exceptional merit" in this field. In case there has appeared work of a quality to warrant it, the next award will be made in 1947. Awards will be made for what in the judgment of the Committee on the Amory Fund appears to be the most outstanding contribution or contributions in the field as outlined and as based on published work and recognized accomplishment for the current seven-year period.

No formal applications and no essays or treatises from individuals are solicited, but suggestions will be welcome from any appropriate source that will be of aid to the Committee in making a wise selection.

Recommendations may be addressed to Secretary, Amory Fund Committee, American Academy of Arts and Sciences, 28 Newbury Street, Boston, Massachusetts.

NATIONAL CONFERENCE ON MEDICAL SERVICE

The twentieth annual meeting of the National Conference on Medical Service will be held at the Palmer House, Chicago, on February 9. Registration will commence at 9 a.m., and the program will include discussions in the fields of national affairs, economics and medical education. All physicians are invited to attend; there is no registration fee. Dr. Cleon A. Nafe, Indianapolis, is president of the Conference and Creighton Barker, New Haven, is secretary.

CHICAGO MEDICAL SOCIETY

The third annual clinical conference of the Chicago Medical Society will be held at the Palmer House, Chicago, March 4-7, 1947. The previous two conferences have warranted the continuance of the meeting, the program of which is selected particularly for the general practitioner. Scientific exhibits from Chicago and adjoining medical centers and commercial exhibits will be included in the program. All physicians are invited to attend. Further information may be obtained from the Society Office, 30 No. Michigan Avenue, Chicago 2, Illinois.

PHILADELPHIA SEMINAR IN RADIOLOGY

The second annual Philadelphia postgraduate seminar in radiology will be held March 30 to April 4, 1947. The course is sponsored by the American College of Radiology and the Philadelphia Roentgen Ray Society.

Registrants will be limited to one hundred, and preference will be given to members of the American College of Radiology who served in World War II. The tuition fee will be $50.00.

Interested radiologists should contact the office of the American College of Radiology, 20 No. Wacker Drive, Chicago 6, Illinois.

MINNESOTA MEDICAL SERVICE

At a meeting held in Saint Paul on January 4, 1947, the articles of incorporation for a non-profit organization to be known as Minnesota Medical Service, Inc. were signed by twenty-one incorporators, and a board of eleven directors was elected.

Dr. Olaf I. Sohlberg, Saint Paul, was named president of the board; Dr. R. R. Cranmer, Minneapolis, vice president; Dr. C. A. McKinley, Minneapolis, secretary; Dr. W. A. Coventry, Duluth, treasurer. Other board members are: Dr. E. C. Bayley, Lake City; Philip G. E. Hoeper, Mankato; Dr. J. F. Norman, Crookston; Dr. E. M. Hammes, Saint Paul; Dr. E. J. Simons, Swanville; Dr. L. L. Sogge, Windom, and Dr. W. W. Yeager, Marshall.

ANNUAL COUNTY OFFICERS MEETING

Officers of all component medical societies of the Minnesota State Medical Association are reminded to keep open Saturday, March 1, 1947, which is the date selected by the Council for the Annual County Officers Meeting. County officers will convene this year at Hotel Lowry,

(Continued on Page 100)

Glenwood Hills Hospitals

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ANNUAL COUNTY OFFICERS MEETING

(*Continued from Page 98*)

Saint Paul. The program begins at 2 p.m. and will end with a banquet at which an outstanding speaker will be selected to address the delegates.

MINNESOTA PATHOLOGICAL SOCIETY

The regular meeting of the Minnesota Pathological Society of the University of Minnesota Medical School, was held on Tuesday evening, December 17, in the Medical Science Amphitheater. The speaker was Dr. Edith L. Potter, of the University of Chicago. Dr. Potter's subject was "The Pathologist's Contribution to the Clinical Diagnosis of Disorders of the Newborn."

GOODHUE COUNTY SOCIETY

Dr. Grant F. Hartnagel was elected president of the Goodhue County Medical Society at the annual meeting held at the St. James Hotel on December 6. Other officers are Dr. Martin G. Flom, vice president; Dr. James F. Brusegard, secretary-treasurer; Dr. Raymond F. Hedlin, delegate to the State Medical Association, and Dr. McGuigan, alternate delegate.

Dr. Woodward L. Colby, of Saint Paul, discussed a pediatric survey which will be conducted by pediatricians of the state.

INTERURBAN ACADEMY OF MEDICINE

The annual election of officers of the Interurban Academy of Medicine was held at the Hotel Spalding in Duluth on November 20. The new president is Dr. Philip F. Eckman, Duluth, who succeeds Dr. H. A. Sincock, of Superior. Dr. Conrad Giesen, of Superior, was elected vice president, and Dr. Henry E. Bakkila, of Duluth, was made secretary-treasurer, replacing Dr. Herbert P. Christianson, of Superior. Dr. Richard Bardon, of Duluth, was elected to the board of censors for a three-year term.

Speakers at the meeting were Dr. Giesen and Dr. Frank J. Hirschboeck of Duluth.

RAMSEY COUNTY SOCIETY

The Ramsey County Medical Society at its meeting in Saint Paul named Dr. Clayton K. Williams, Saint Paul, as president-elect to take office in 1948. The president for the ensuing year is Dr. John M. Culligan. Other officers who assumed their duties on January 1 are Dr. Lyman R. Critchfield, vice president, and Dr. Laurence D. Hilger, secretary-treasurer.

A feature of the meeting was a symposium of the recent polio epidemic. Discussion leaders included Dr. Robert B. J. Schoch, Saint Paul city health physician, Dr. Wallace Cole, Dr. P. K. Artz and Dr. Frank Hedenstrom. About 149 members of the society attended.

REDWOOD-RENVILLE COUNTY SOCIETY

Dr. Ralph E. Erickson, of Hector, was elected president of the Redwood-Renville County Medical Society

(*Continued on Page 102*)

The newly diagnosed diabetic and Globin Insulin

WHEN DIETARY MEASURES ALONE cannot control a recently established case of diabetes and insulin must be resorted to, *one daily injection* of intermediate-acting 'Wellcome' Globin Insulin with Zinc will often prove both adequate and beneficial. This simplified regimen can be initiated in the following manner:

ESTIMATING THE DOSAGE: The simplest method is to start with 15 units of Globin Insulin and increase the dosage every few days, as required. A closer estimation is obtained by quantitative sugar determination of a 24-hour urine specimen. For the initial dosage, ⅔ of a unit of Globin Insulin is given for every gram of sugar spilled in 24 hours.

Both diet and dosage must subsequently be adjusted to meet the needs of each individual patient.

ADJUSTING THE DIET: In general it has been found that a good carbohydrate distribution for the patient on Globin Insulin consists of 1/5 of the total carbohydrate at breakfast, 2/5 at the noon meal, and 2/5 at the evening meal. Any tendency toward midafternoon hypoglycemia may usually be offset by giving 10 to 20 grams of carbohydrate between 3 and 4 p.m.

This starting diet may subsequently be adjusted as required to suit the needs of the patient. Final adjustment of carbohydrate distribution may be based on fractional urinalyses.

ADJUSTING TO 24-HOUR CONTROL: Simultaneously adjust the Globin Insulin dosage to provide 24-hour control as evidenced by a fasting blood sugar level of less than 150 mgm., or sugar-free urine in the fasting sample.

'Wellcome' Globin Insulin with Zinc is a clear solution, comparable to regular insulin in its freedom from allergenic properties. Available in 40 and 80 units per cc., vials of 10 cc. Accepted by the Council on Pharmacy and Chemistry, American Medical Association. Developed in The Wellcome Research Laboratories, Tuckahoe, New York. U.S. Patent No. 2,161,198. LITERATURE ON REQUEST.

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The Tablet, No Heating Method

Simply drop one Clinitest Tablet into test tube containing proper amount of diluted urine. Allow time for reaction—compare with color scale.

NOTE—NEW ATTACHMENT FOR ADDED CONVENIENCE

The test tube clip now supplied with each pocket-size case enables the test tube to be hooked on to the outside of case, as shown in illustration.

This simple device provides an added convenience for the user—tube is maintained in an *upright* position, tube is held *motionless* during reaction.

FOR OFFICE USE:
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Complete information upon request.

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REDWOOD-RENVILLE SOCIETY

(Continued from Page 100)

at the annual business meeting held in the community hall at Morgan. Dr. Ralph E. Billings, of Franklin, was elected secretary.

Following the dinner and meeting, the twenty-two members who attended were entertained at a social gathering at the home of Dr. and Mrs. William E. Johnson in Morgan.

ST. LOUIS COUNTY SOCIETY

Results of the annual election of officers of the St. Louis County Medical Society, which was conducted by mail balloting were announced at the annual banquet held at the Northland Country Club at Duluth on December 12. The president-elect is Dr. Peter S. Rudi, of Duluth. Dr. Elizabeth C. Bagley, Duluth, was reelected secretary-treasurer, and Dr. Reginald A. Salter, Virginia, vice president. Dr. Daniel W. Wheeler, Duluth, is the 1947 president, succeeding Dr. Paul G. Boman, Duluth.

Dr. Gerhard von Glahn, professor of political science and economics at the Duluth State Teachers College, spoke on "The European Scene Today."

WASHINGTON COUNTY SOCIETY

At the annual meeting of the Washington County Medical Society, the following officers were elected for 1947: President—Francis M. McCarten; first vice president—Russell E. Carlson; second vice president—Emmett R. Samson; secretary-treasurer—E. Sydney Boleyn; delegate—E. Sydney Boleyn; alternate delegate—Wade R. Humphrey; censor for 1947, 1948, 1949—R. J. Josewski, all of Stillwater.

Heart Disease

(Continued from Page 73)

stored to full or partial working capacity. Similarly, studies of children attacked by rheumatic fever show that more than 90 per cent of those who escape serious heart damage lived ten years or longer, and even among those with heart damage a great majority are living ten years after onset. Those without serious heart involvement can usually lead normal lives, with little restricton. This applies also, in considerable measure, to those with damaged hearts, although they must avoid certain types of occupations.

Altogether, then, there is little cause for alarm over the situation in heart disease today. The great bulk of the deaths from this cause occur in older people. It is necessary, of course, to see that elderly heart disease patients are properly cared for. Relatively few of them, however, require or can afford expensive hospital or institutional care. Many cardiacs in the older age groups can live happy useful lives in their own households. Their social, economic, and cultural problems are often more important than their medical problems. The special types of facilities required to cater to these people are in many instances a responsibility of the community.

to combat

depression associated with

persistent pain...

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Occupational Therapy. Speech Corrective Work.

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Of General Interest

Dr. Henry P. Linner, Minneapolis, has been elected surgeon for the Hamilton Fish Camp No. 7, U. S. Spanish War Veterans.

* * *

The regular quarterly chest clinic conducted by the Rochester Department of Health, was held at the city hall on December 3. Dr. Carl Pfeutze, superintendent of the Mineral Springs Sanatorium, was in charge.

* * *

Dr. Alfred W. Adson, Rochester, was guest speaker at the meeting of the Four County Medical Auxiliary held in Mayo Foundation House on November 29. Dr. Adson discussed prepayment medical care.

* * *

Dr. Clyde E. Wilson has closed his hospital at Blue Earth after more than thirty years of operation. The termination of his hospital activities will not affect his private practice, which will be continued.

* * *

Dr. Ernest F. Cowern, village doctor at North Saint Paul for the past forty-three years, was guest of honor at a dinner sponsored by fellow lodge members on December 13.

* * *

Dr. Orville J. Swenson, of Waseca, recently underwent surgery at Rochester for the correction of two slipped discs in the upper part of his spine. Dr. Swenson expects to be out of practice for about two months.

* * *

Dr. William H. Hengstler, specialist in nervous and mental diseases, discussed the "Emotional Effects of Children's Experiences" at the December meeting of Section 1 of the Child Psychology Study Circle of Saint Paul.

* * *

Dr. M. M. D. Williams, of the Mayo Clinic, has returned from Chicago, where he assisted with the examinations for the American Board of Radiology. Dr. Williams also attended the meeting of the Radiological Society of North America.

* * *

Organization of a Minnesota Chapter of the American College of Physicians and Surgeons has been completed. Dr. Fred Benn, of Minneapolis, was elected president and Dr. Albert E. Ritt, of Saint Paul, secretary-treasurer.

* * *

A tuberculin test was conducted recently by Dr. Kathleen Jordan, of the Minnesota Public Health Association, at the public schools at Willmar. About 660 pupils in the first, sixth, ninth and twelfth grades were tested.

* * *

Dr. Louis R. Buie, of the Mayo Clinic, has been in Chicago for the meetings of the Judicial Council, the Committee on the Revision of the Constitution and By-laws, and the House of Delegates of the American Medical Association.

* * *

Dr. Harry B. Zimmerman, Saint Paul, was re-elected recorder of the Western Surgical Association at the annual meeting held in Memphis, Tennessee, during the first week of December. Dr. Frank C. Mann, of Rochester, was elected first vice president.

* * *

Under the will of the late Dr. Julius A. Hielscher, Mankato, two hospitals are included as beneficiaries. One-half of Dr. Hielscher's estate, which is in excess of $60,000, goes to St. Joseph's Hospital and one-fourth to Immanuel Hospital, both in Mankato.

* * *

Announcement has been made of the appointment of Dr. Charles W. Mayo, of Rochester, as chairman of a nineteen-member advisory committee on medical care for veterans by the Veterans Administration in Washington, D. C.

* * *

While Dr. H. Cope has been interning at Bethesda Hospital in Saint Paul, Mrs. Cope, who is a pianist, has been completing her musical studies at the McPhail School of Music in Minneapolis. On November 14, Mrs. Cope played her graduation recital.

* * *

Dr. Andrew Gullixson, who has been in medical practice in Albert Lea for the past forty years, is assembling a history of the early doctors of Freeborn County which will be included in the History of Medicine in Minnesota.

* * *

Correction—Due to a printer's error, the amount of the Van Meter Prize Award for 1947 was incorrectly listed in the announcement which appeared in the November number of Minnesota Medicine. The amount of the Award is $300.00.

* * *

While on a brief visit at the Mayo Clinic, Dr. V. G. Vaishampayn, chief medical officer of the N. W. Wadia Charitable Hospital at Shaolpaur, Bombay Presidency, India, completed the arrangements for some of the fifty-four doctors whom the India government is sending to America on fellowships to study at the Clinic.

* * *

Dr. John Collin Hays, formerly of Saint Paul, who is a ward officer at Mason General Hospital, Brentwood, New York, has been promoted to the rank of captain. Dr. Hays took his B.A., M.B., and M.D. degrees at the University of Minnesota and served both his internship and residency at the Minneapolis General Hospital.

(Continued on Page 108)

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McKesson Water Type Metabolor
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Pelton, Castle and Burton Spotlites
Ultra-Violet and Infra Red Lights
Cincinnati Obstetrical Tables
Mont Reid Operating Tables
Wocher Explosion-Proof Operating Tables
All Kinds of Gomco Suction Pumps
Castle, Pelton and American Instrument Sterilizers
Ritter Ear, Nose and Throat Units, Cuspidors and Stools
Improved Bellevue Hospital Model Suction Pumps
Wheel Stretchers, Invalid Walkers and All Kinds of Wheelchairs
Hamilton Examination Tables, Treatment Cabinets, Instrument Cabinets, Waste Receptacles and Stools—white with Black Trim
American 10-Gallon Water Sterilizers, 220 Volt A.C., 6,000 watt, type A heater on each tank, low water cutout, pressure control, standard plated finish, 101 white stand

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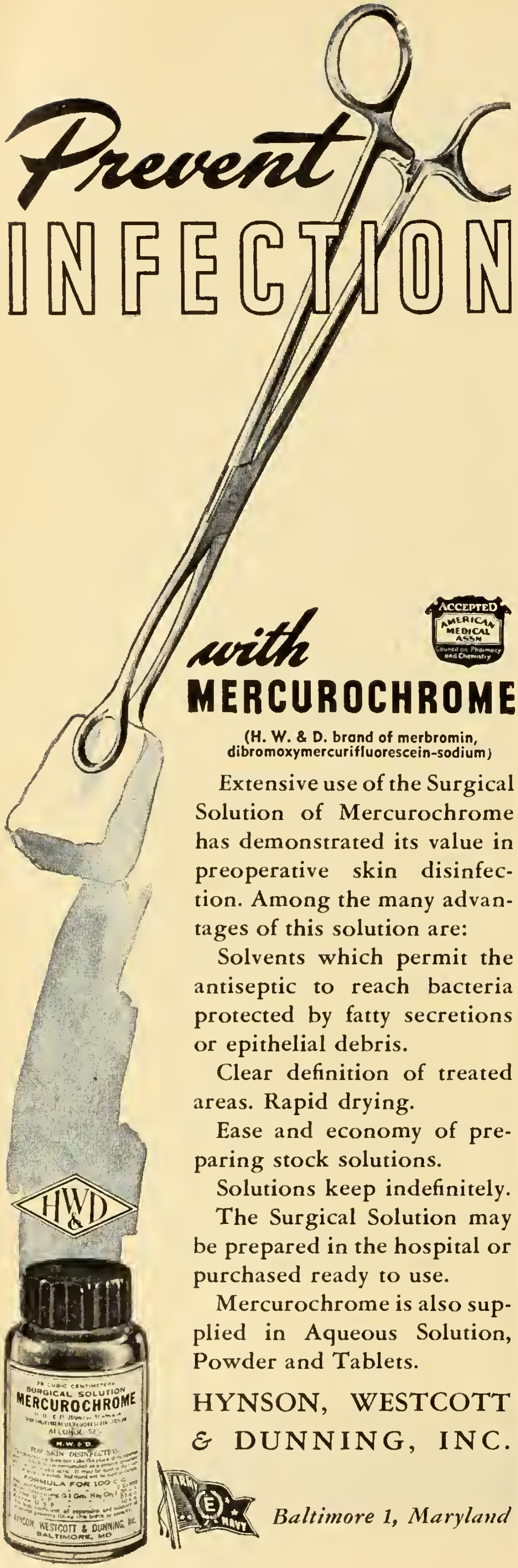

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(Continued from Page 106)

Announcement has been made of the appointment of Dr. Joseph C. Klein, of Shakopee, as department surgeon of the Veterans of Foreign Wars of Minnesota, by the State Council of Administration of the VFW. During the war Dr. Klein was a member of the Naval Corps.

* * *

Dr. John Eiler, of Park Rapids, has been joined in a partnership by Robert G. Tinkham, formerly of Minneapolis. Since his discharge from the Army last February. Dr. Tinkham has been associated with the Duluth Clinic. He was in service for two and a half years.

* * *

The American Pharmaceutical Manufacturers Association Award of Distinction was presented to the Mayo Foundation for Medical Education at the midyear meeting of the manufacturers in New York City on December 9. Dr. Donald C. Balfour accepted the award for the Foundation.

* * *

Dr. Russell Frost, assistant chief of the tuberculosis section, Veterans Administration, Fort Snelling, was guest speaker at the anunual Public Health Dinner, sponsored by the Kiwanis Club at Willmar on November 12. His subject was "The Tuberculosis Program of the Veterans Administration." Dr. Frost is a former Willmar resident.

* * *

Drs. Frances M. McCarten and Russell Carlson, of Stillwater, whose offices were burned out in the recent fire which destroyed the drug store building in which they were located, have established temporary offices with Dr. James H. Haines in the Holcombe Block. Both doctors lost much valuable equipment but were able to save their records and books.

* * *

Dr. Earl Crow, assistant superintendent of the State Sanatorium at Walker, has been appointed superintendent of the institution, succeeding Dr. Francis F. Callahan, who has resigned to enter private practice in Saint Paul.

Dr. Crow is a native of Walker and a graduate of the University of Minnesota Medical School.

* * *

Dr. James C. Crabtree, of Princeton, has been filling a vacancy temporarily at the Northern Pacific Hospital in Saint Paul, caused by the resignation of Dr. Louis Rosenbladt who has gone to Tacoma, Washington. Dr. Crabtree expected to return to Princeton as soon as the Community Hospital opens, which should be shortly after the first of the year.

* * *

Announcement has been made of the marriage of Miss Mary Lou Helmerson of Minneapolis, to Dr. James C. Breneman at Zion Lutheran Church, Fort Custer, Michigan.

Dr. Breneman, whose home was in Martin County, is a graduate of Gustavus Adolphus College, St. Peter,

(Continued on Page 110)

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ASCORBIC ACID
(VITAMIN C)
100 MG.
Dose: 1 daily or as prescribed by physician.
100 CAPSULES
WALKER'S
HEXAVITAMIN
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For use in the treatment of Ascorbic Acid deficiencies.
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(NICOTINIC ACID)
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WALKER'S
SOLUTION THIAMINE HYDROCHLORIDE
STABILIZED AQUEOUS SOLUTION Per CC. THIAMINE HYDROCHLORIDE (B₁) 5 Mg.
DOSAGE: % M.D.R.
INFANT - - - - 3 Drops 400%
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MORE AS DIRECTED BY PHYSICIAN
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5 MG.
Dose: 1 daily or as prescribed by physician.
For use in the treatment of Riboflavin deficiencies.
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10 MG.
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100 TABLETS
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50 MG.
To be used only by, or on prescription of physician.
For use in the treatment of Niacin deficiencies.
WALKER VITAMIN PRODUCTS, INC. MOUNT VERNON NEW YORK
60 cc.
WALKER'S
CONCENTRATED OLEO VITAMIN A-D DROPS
Place on tongue or mix with fruit juices or food.
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100 TABLETS
NIACINAMIDE
(NICOTINAMIDE)
50 MG.
To be used only by, or on prescription of physician.
For use in the treatment of Niacinamide deficiencies.

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(Continued from Page 108)

and the University of Minnesota Medical School. He is now associated with the Veterans Hospital at Fort Custer and makes his home at Battle Creek.

* * *

The Minnesota State Medical Association and the State Society for the Prevention of Blindness have appointed a four-man committee to arrange facilities for obtaining human eyes for the blind.

The members of this committee, who will serve as contact for persons wishing to donate eyes to blind persons, are Dr. Frank Burch, Saint Paul, chairman; Dr. Frank Knapp, Duluth; Dr. Erling Hansen, Minneapolis, and Dr. William Benedict, of Rochester.

* * *

Dr. James W. Reid has opened offices for the practice of medicine and surgery in the West Twins Building in West Saint Paul. Dr. Reid is a 1942 graduate of the University of Minnesota Medical School. He entered military service the same year, and with the rank of captain was assigned to the European Theater for over two years. Dr. Reid made his home in South Saint Paul for twenty-five years and he is a nephew of Andrew Reid, postmaster at South Saint Paul.

* * *

Dr. Winchell McK. Craig, Mayo Clinic, has been in Washington, D. C., where he attended a conference of the Naval Reserve Policy Board called by Secretary of the Navy James Forrestal.

Members of the board, which serves as an advisory unit to the Secretary of the Navy, were put on active duty for the duration of the conference. Dr. Craig attended in his capacity as rear admiral.

* * *

The Minnesota State Medical Association has signed a contract with the Veterans Administration under which veterans suffering from a service-connected disability or illness may be treated by their local physicians. Under the plan, in which 2600 doctors will participate, statement for services will be rendered to the State Medical Association and it, in turn, will collect from the VA.

* * *

In addition to his private practice, during which he has delivered 1,360 babies, Dr. Cowern has also been staff physician at St. John's Hospital, and has served as deputy coroner. A graduate of Dartmouth Medical College, Dr. Cowern spent a brief period of practice in Massachusetts and New Hampshire before locating in Saint Paul. During World War I he was medical instructor in the medical corps at Fort Oglethorpe, Georgia.

* * *

Dr. Kenneth W. Covey, of Mahnomen, has announced his association with Dr. A. W. Skoog-Smith, of Minneapolis, as of December 2.

Dr. Skoog-Smith took his premedical work at the University of Ohio and he graduated from the Univer-

(Continued on Page 112)

The Birches Sanitarium, Inc.
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A hospital for the care and treatment of Nervous and Mental disorders. Quiet, cheerful environment. Specially trained personnel. Recreational and occupational therapy.

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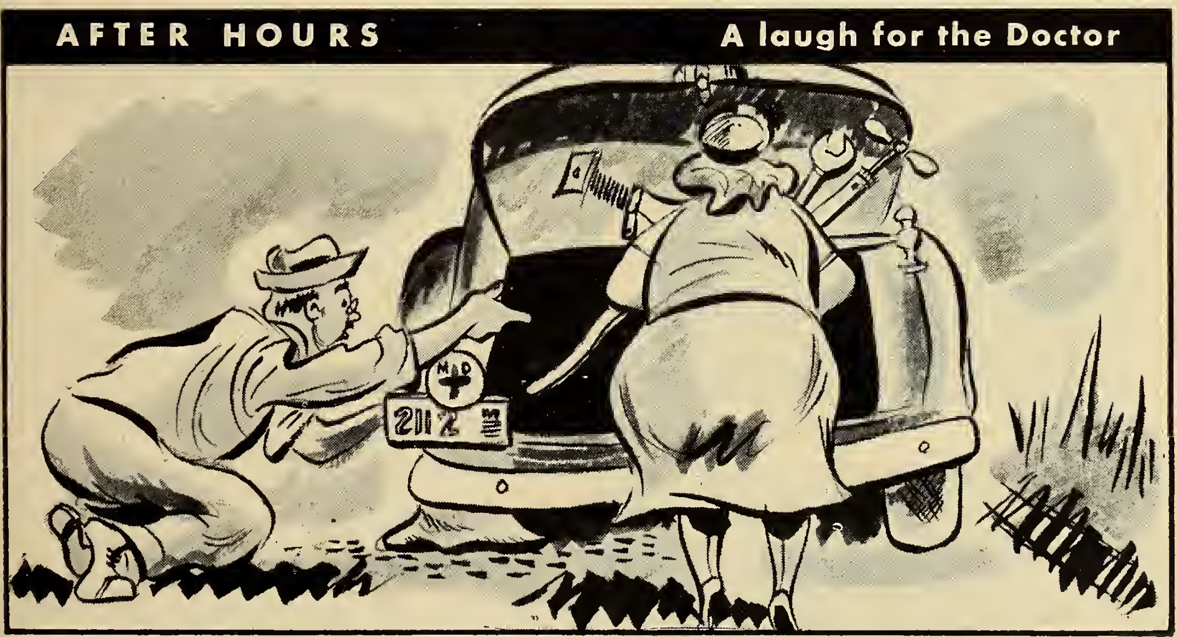
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(Continued from Page 110)

sity School of Medicine in 1943. He interned at General Hospital in Minneapolis. Following the completion of his internship he entered the Army, where he served for twenty-two months in Holland and Germany.

* * *

The Hennepin County Medical Society was addressed by Dr. Nils Westermark, x-ray chief at the University of Stockholm, at their meeting on December 9 in the Medical Arts Building.

Dr. Westermark, who discussed bronchial cancer, is visiting American medical schools and has lectured at the University of Minnesota, the Mayo Clinic in Rochester and at the meeting of the Radiological Society held in Chicago recently.

* * *

Educational talks on cancer will be given by Duluth members of the St. Louis County Medical Society on request at various clubs and fraternal meetings throughout the city. The Duluth Chapter, Minnesota Cancer Society, is sponsoring these talks. Among the doctors already having given their services for this purpose are Dr. Charles Bagley, Dr. Duncan V. Luth, Dr. Karl Johnson, Dr. Clarence H. Christensen, Dr. John D. Barker and Dr. Henry G. Geronimus.

* * *

Support of legislation giving counties or groups of counties the authority to establish local health departments, which is to be presented at this session of the legislature, is urged by Dr. Donald A. Dukelow, head of the health and medical care division, Minneapolis Council of Social Agencies, and vice president of the Minnesota committee on local services.

According to Dr. Dukelow, a survey made in 1942 revealed that only 34 per cent of Minnesota's population was served by local full-time health officers.

* * *

Drs. John J. Bittner and George Crane Christian, cancer research specialists at the University of Minnesota, and Dr. Robert A. Huseby, fellow of the International Cancer Research Foundation, at the University, attended the conference on Nutrition in Relation to Cancer which was held in New York City on December 6 and 7.

The conference was sponsored jointly by the New York Academy of Sciences and the Panel on Nutrition, Committee of Growth, National Research Council.

* * *

Specially prepared films are being produced by the McGraw-Hill Book Company for supplementing the use of a *Textbook of Healthful Living,* by Dr. Harold S. Diehl, dean of medical sciences at the University of Minnesota Medical School. The 16 mm. sound-motion pictures, illustrating such subjects as Body Care and Grooming, Personal Health, Sex Education, Mental Hygiene, et cetera, present this information in an entirely factual manner, and the innovation is said to be of value in explaining the more difficult text matter.

(Continued on Page 114)

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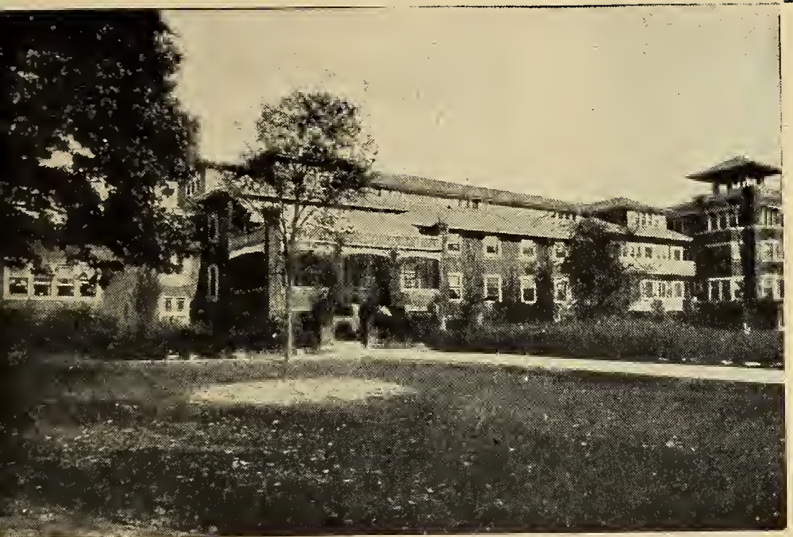

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(Continued from Page 112)

Dr. Manfred W. Comfort, of the Mayo Clinic, presented a paper on "Gastric Acidity Before and After Development of Gastric Carcinoma" at the recent conference on gastric cancer held at the Billings Hospital, Chicago University. The paper was co-authored by Drs. Mavis P. Kelsey and Joseph Berkson, both of the Clinic.

The conference was attended by about 125 physicians, research workers and representatives of cancer research foundations. Among them were Drs. Berkson, Frank C. Mann, George M. Higgins, John R. McDonald, Harold L. Mason and Hugh R. Butt, all of Rochester.

* * *

The first dinner meeting of the general medical faculty of the University of Minnesota since the end of the war was held in Coffman Memorial Union on Monday evening, December 9.

Major school developments during the past year were outlined by Dr. Harold S. Diehl, dean of medical sciences, who also announced future plans.

A report of the status of fund drives for the proposed Mayo Memorial Building to be constructed on the university campus was made by Dr. Donald Cowling of Saint Paul, who is chairman of the Memorial Committee.

* * *

At the annual meeting of the American Public Health Association in Cleveland in November, five members of the staff of the University of Minnesota Medical School were elected to office in the organization. Dr. Harold S. Diehl, dean of medical sciences, Dr. Gaylord Anderson, head of the School of Public Health, and Dr. Albert J. Chesley, clinical professor emeritus of public health and secretary of the Minnesota State Board of Health, were elected to the governing council of the organization for three-year terms.

Harold A. Whittaker, professor of public health engineering, was made vice president, and George O. Pierce, associate professor of public health engineering, was elected secretary of the association.

* * *

Veteran members of the medical profession in the neighborhood of Slayton joined recently with the local Civic and Commerce Association in sponsoring a dinner in honor of Dr. Leon A. Williams, of Slayton, who recently retired after a half century in medical practice in Murray County. Dinner was served in Wesley Hall and a program of interesting addresses and music by a male quartet was presented. Visiting doctors who paid tribute to Dr. Williams were Dr. Ludwig L. Sogge, of Windom, Dr. Herminus De Boer, of Edgerton, Dr. Byron O. Mork, of Worthington, Dr. Walter H. Valentine, of Tracy, and Dr. Sidney A. Slater, of Southwestern Sanatorium, at Worthington.

* * *

Dr. Ralph E. Wenzel has entered practice at Albert Lea with offices in the Albert Lea Medical and Surgical Center.

Dr. Wenzel, who is a 1938 graduate of Northwestern University Medical School, was in the U. S. Public

Health Service prior to entering military service. A member of the Coast Guard, he served as chief medical officer, captain of the Port of Los Angeles, and as assistant district medical officer in Honolulu. Later he was assigned to the Marine Hospital in Chicago. Since his separation from service he has been engaged in special study in obstetrics at the University of Iowa Medical School.

* * *

Headquarters, Fifth Army, has announced the promotion of Maxwell M. Barr, 1035 N. Washburn, Minneapolis, to the rank of captain, on December 19. Captain Barr was one of four medical officers who were promoted here.

Captain Barr received his medical degree at the University of Minnesota and was employed at the Mayo Clinic as an obstetrician prior to his entry into the armed services. He was commissioned in July, 1945, and attended an Army Specialized Training Program school before coming to the station hospital at Camp McCoy. His present duties are those of Receiving and Disposition Officer at the McCoy hospital.

* * *

The following Minnesota surgeons were received into fellowship in the American College of Surgeons on December 20, 1946, during the Clinical Congress held in Cleveland: David P. Anderson, Jr., Austin; William H. Bickel, Rochester; Everett B. Coulter, Minneapolis; Earl H. Dunlap, Minneapolis; Reinhold M. Ericson, Minneapolis; George T. R. Fahlund, Rochester; Fred Z. Havens, Rochester; Eugene M. Kasper, Saint Paul; Rochfort W. Kearney, Mankato; Paul C. Kiernan, Rochester; Howard H. Lander, Rochester; Paul N. Larson, Minneapolis; Donovan L. McCain, Saint Paul; John R. Paine, Minneapolis; Wesley G. Schaefer, Minneapolis; Anthony J. Spang, Duluth.

* * *

Dr. Kenneth A. Peterson has opened offices for the practice of medicine and surgery at Marshall in association with Dr. Frank D. Gray.

Dr. Peterson, who is the son of Dr. Roy A. Peterson, of Vesta, graduated from the University of Minnesota Medical School. He interned at the Minneapolis General Hospital and was resident physician at the Midway Hospital for two years prior to entering military service.

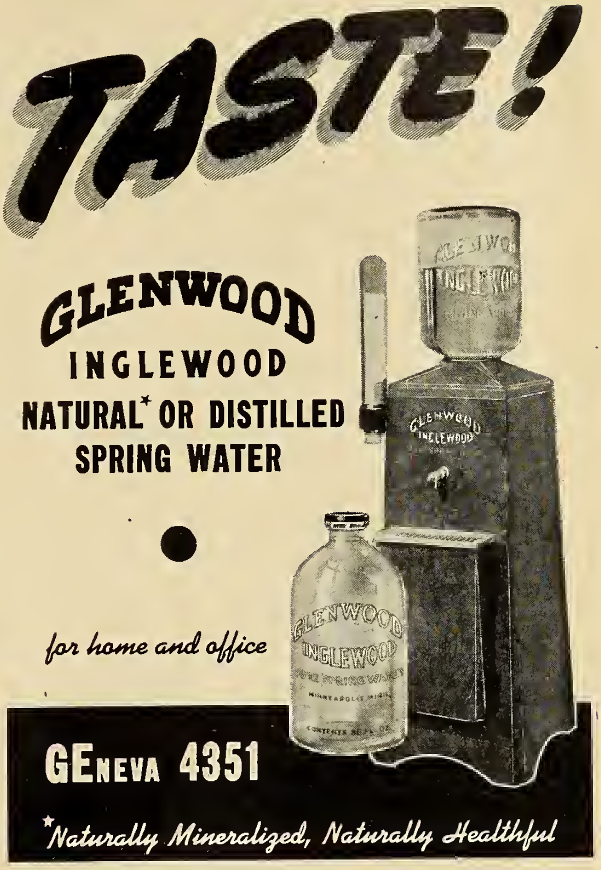
His army assignments included Northington General Hospital in Tuscalusa, Alabama, where he was engaged in neurosurgical, orthopedic and plastic surgery. Just prior to his separation from service he was at the Regional Hospital at Ft. McClellan, Alabama, where he was chief of the outpatient department.

* * *

Dr. Lawrence M. Randall was elected president of the staff of the Mayo Clinic at the annual staff dinner and meeting held at the Rochester Golf and Country Club, on November 18.

Dr. Edward N. Cook is the new secretary, Dr. John D. Camp was made first counselor and Dr. Monte C. Piper, second counselor.

Eleven physicians who have attained the rating of emeritus staff members at the Clinic were honored with testimonial booklets and gifts from the staff. Some of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them had been retired within recent months. These physicians were Dr. Samuel Amberg, Dr. William F. Braasch, Dr. H. Milton Conner, Dr. John L. Crenshaw, Dr. Herbert Z. Giffin, Dr. John H. Rosenow, Dr. Christopher Graham, Dr. Willis S. Lemon, Dr. Archibald H. Logan, Dr. Albert Miller and Dr. Charles G. Sutherland.

* * *

Six states were represented at the North Central Medical Conference held in Saint Paul in November. An address on rural medical care was given by Dr. L. W. Larson, of Bismarck, who is secretary of the North Dakota Medical Association. Pointing out that the two major phases of rural medical care are availability and cost, Dr. Larson stated that young physicians are being encouraged to locate in rural areas where the need is greatest, but added that farm people "must be able to offer a doctor a decent living wage, opportunity for advancement, facilities with which he can practice modern medicine and a desirable town in which to live."

* * *

HOSPITAL NEWS

Alvin Langehaug has been appointed superintendent of Fairview Hospital in Minneapolis, effective January 1. Mr. Langehaug comes from Chicago where he has been superintendent of a 180-bed Norwegian-American Hospital. He is a graduate of St. Olaf College and was a school superintendent in Minnesota from 1926 to 1937. He entered military service in 1943 and was discharged in 1945, as captain in the Army Medical Administrative Corps.

At one time Mr. Langehaug was superintendent of the Lutheran Hospital at Fort Dodge, Iowa, for six years. He is a past president of the Iowa Hospital Association, a member of the American Hospital Association and of the American College of Hospital Administrators.

* * *

Announcement has been made by the Board of Directors of Asbury Hospital, Minneapolis, of the election of Dr. Henry E. Hoffert as president of the staff. Other officers selected at the same time were Dr. Alfred N. Bessesen, vice president; Dr. Paul J. Preston, secretary and treasurer; and Dr. R. R. Cranmer, member of the advisory board. Holdover members of the board are Dr. Ernest R. Anderson, Dr. Thomas A. Peppard, and Dr. Leonard K. Buzzelle.

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BOOK REVIEWS

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THE CHEST—A Handbook of Roentgen Diagnosis. Leo G. Rigler, M.D., Professor and Chief, Department of Radiology, University of Minnesota. 352 pages. 338 illus. Price $6.50. Chicago: Year Book Publishers, Inc., 1946.

As might be expected by those who are familiar with Dr. Leo Rigler's teachings and previous writings, his new book on "The Chest" is a particularly outstanding work. The book is one of a series of handbooks of Roentgen Diagnoses published by the Year Book Publishers, Inc., of Chicago. Probably its greatest virtue is the number and brilliance of the reproductions and the exacting clarity and ease of correlation of the accompanying descriptions. The normal and normal variations, as well as the pathological, are adequately presented—a feature of real value to the student and occasional radiographer.

The entire field of abnormal chest roentgenology is remarkably well presented in the section on pathologic conditions. The amount of factual information presented, together with the wide variety of subjects covered, is, for a book of this size, most unusual. Most certainly the general coverage is such that it well provides "a foundation of knowledge and a guide for the analysis of any roentgenograms of the chest." This book will find wide usage as a constant reference for radiologists and as a source of fundamental information for students and practitioners. It far outdistances anything yet published in the field of chest roentgenology. It is a good reflection of a dynamic and brilliant teacher of Radiology—Leo Rigler!

C. N. Borman, M.D.

NATIONAL FORMULARY VIII. 888 pages. Price, $7.50. Eastin, Pa.; Mack Publishing Co., 1946.

The eighth edition of this standard work is now available. Published by the American Pharmaceutical Association, it provides official specifications for many widely used drugs not included in the U. S. Pharmacopoeia. Some 188 new admissions appear in the new issue. As new standards and formulas are devised, they will be made known through interim revisions or supplements. The new N. F. VIII becomes official April 1, 1947.

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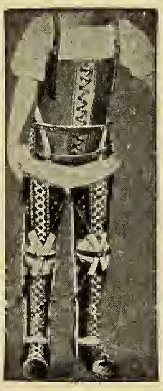

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Delegates Hear Pleas

(Continued from Page 76)

licensure board, it was reported. The delegates approved Dr. Hedin's motion that two members of the present board of nurse examiners, one rural hospital administrator and one representative each from the medical profession and the practical nurses group should compose this board to have jurisdiction over all matters pertaining to the practical nurse.

In addition to approving the establishment of twenty one-year practical nurse training schools, the delegates also voted their approval of increasing the present three-year nurse training schools by ten.

Cognizance is being taken of this plea from the medical profession for remedial measures in the nursing field. Just recently the Board of Regents approved the establishment of a one-year course for practical nurses in connection with the School of Nursing at the University of Minnesota. Doubtless many hospitals throughout the state will take similar action as soon as the courses can be established.

Treatment of Hyperthyroidism

(Continued from Page 41)

ing has been discovered to equal the results of thyroidectomy successfully performed.

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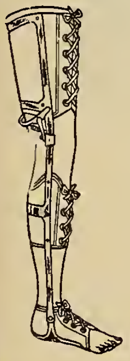

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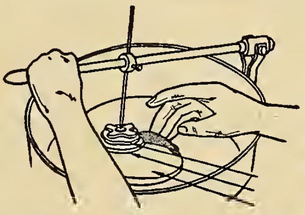

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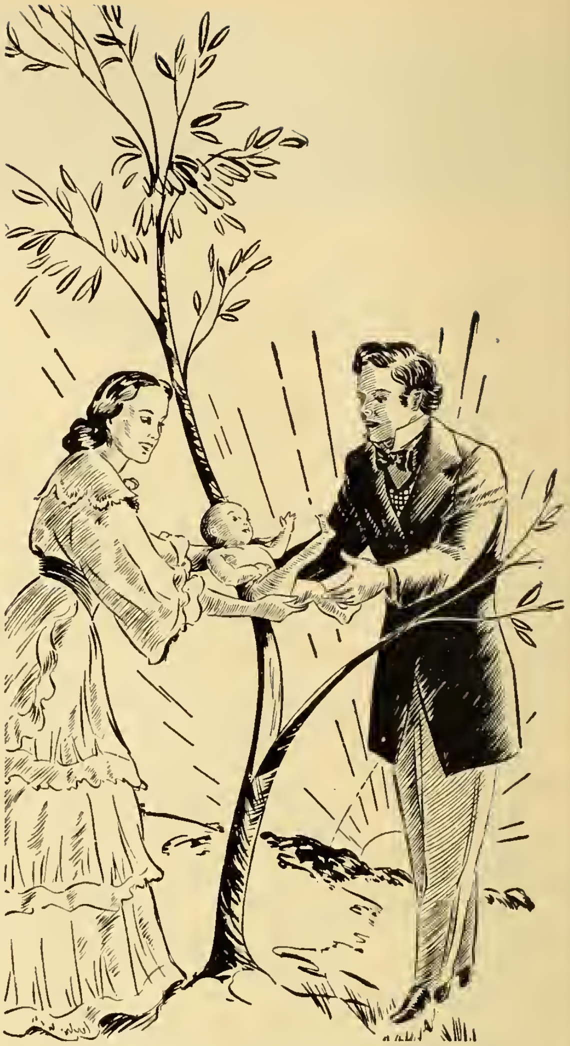

It is ironical that the practice of attempting to cure rickets by holding the child in the cleft of an ash tree was associated with the rising of the sun, the light of which we now know is in itself one of Nature's specifics.

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*Frazer, J. G.: The Golden Bough, vol. 1, New York, Macmillan & Co., 1928

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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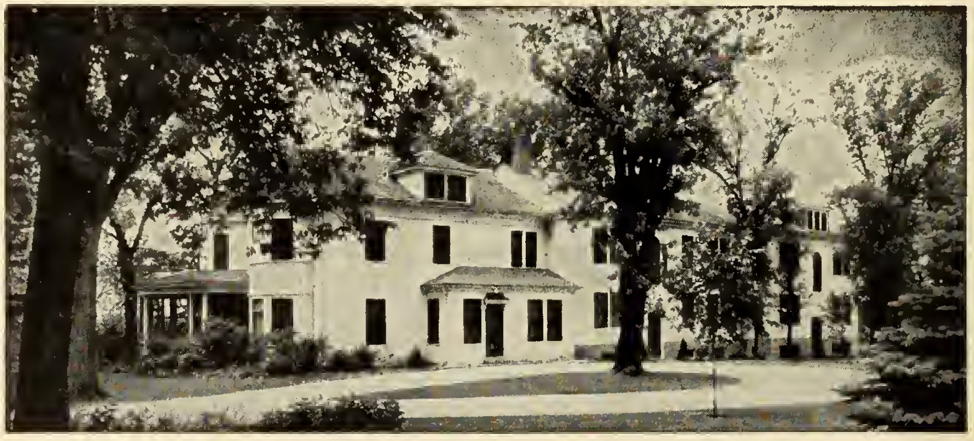

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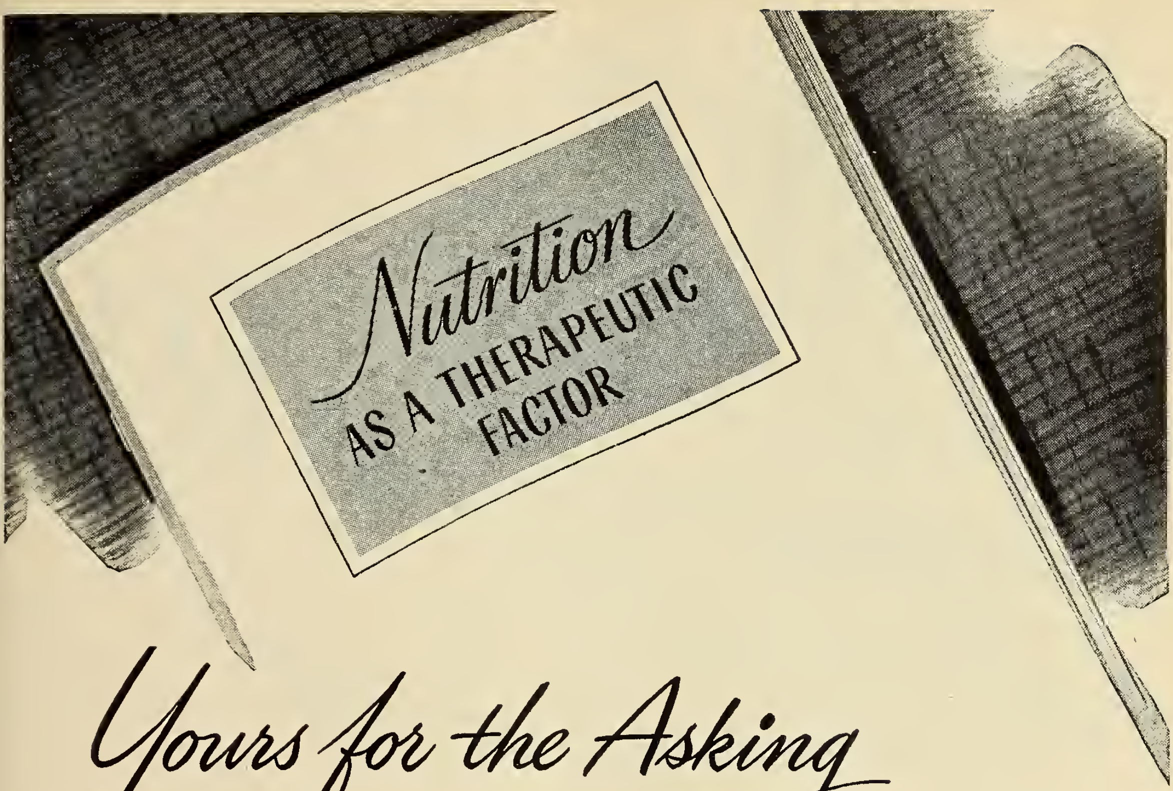

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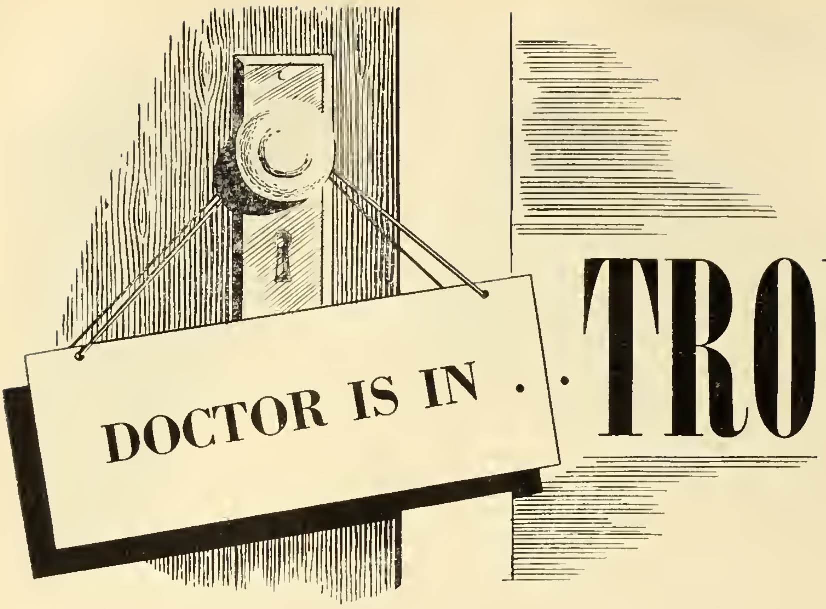

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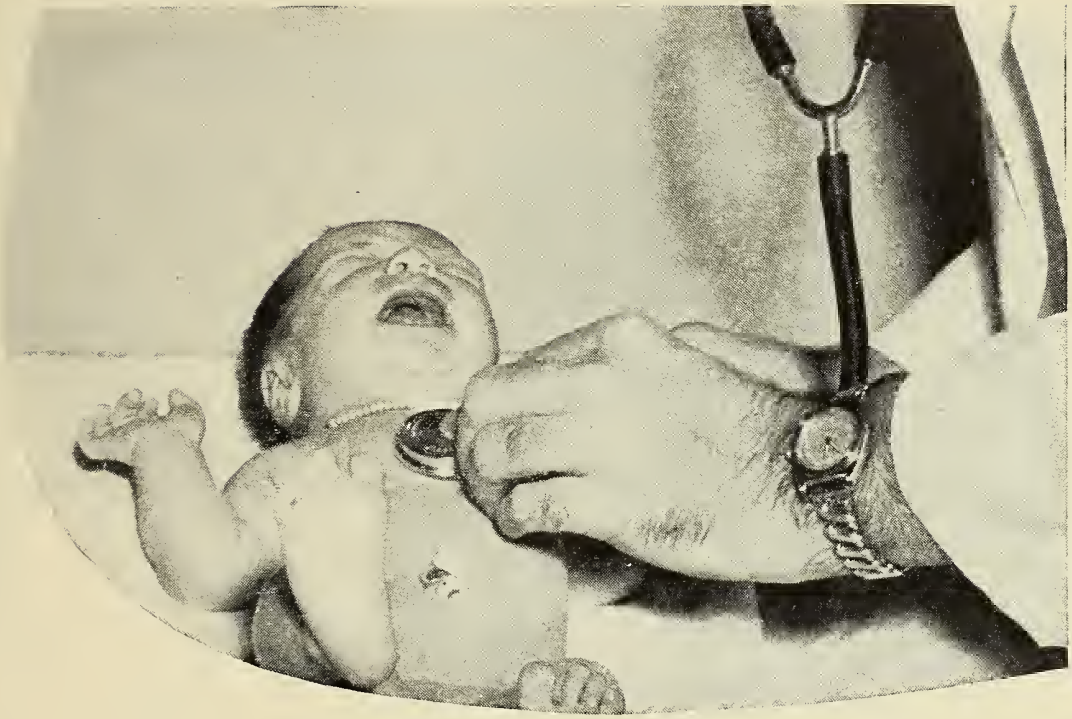

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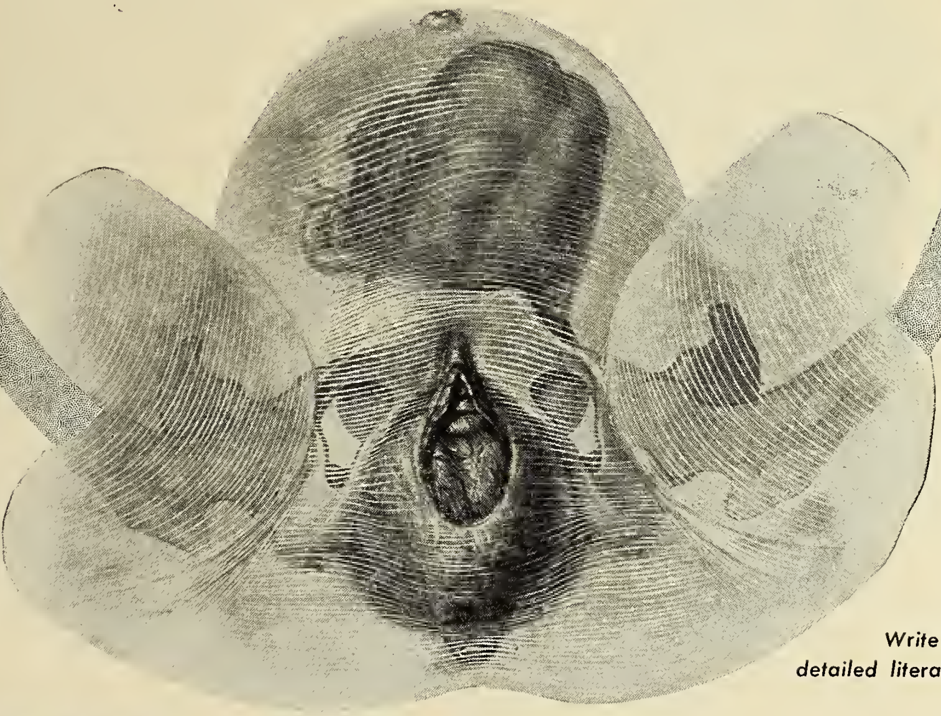

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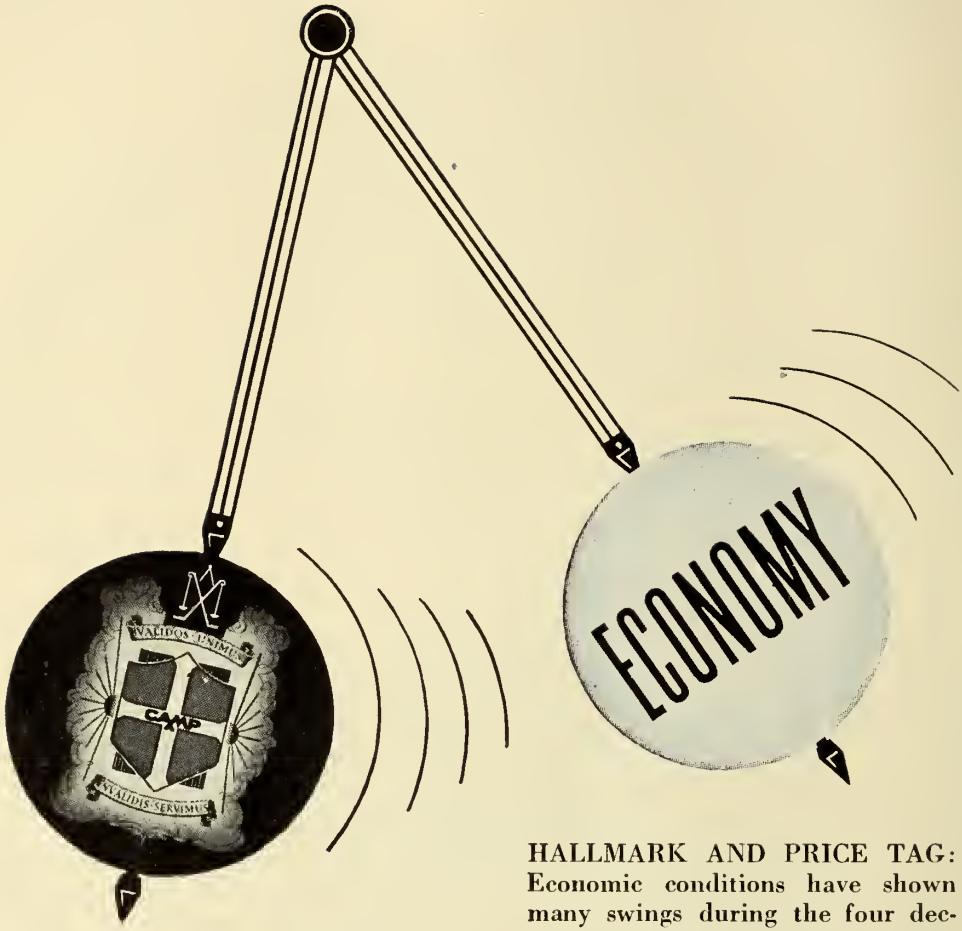

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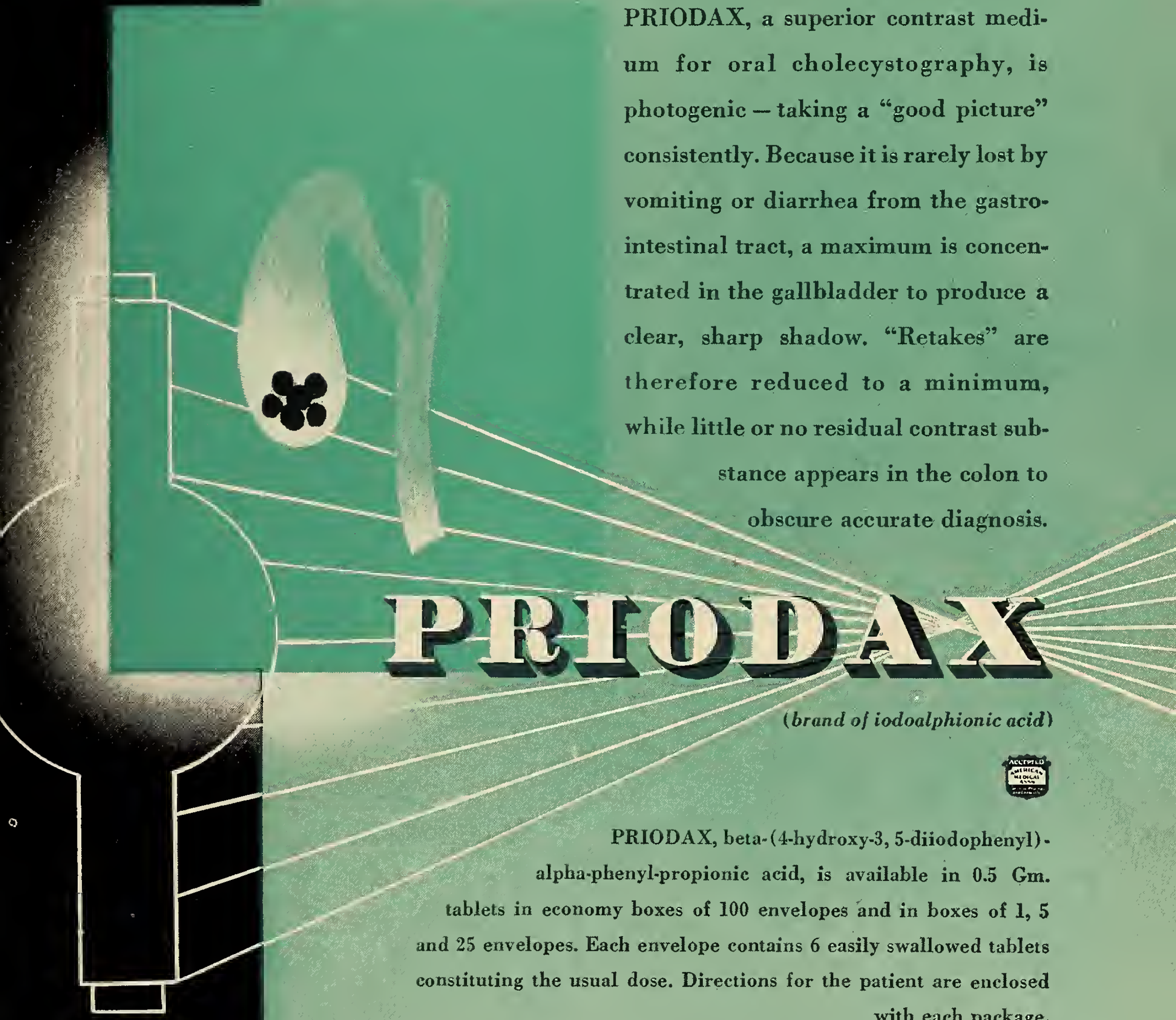

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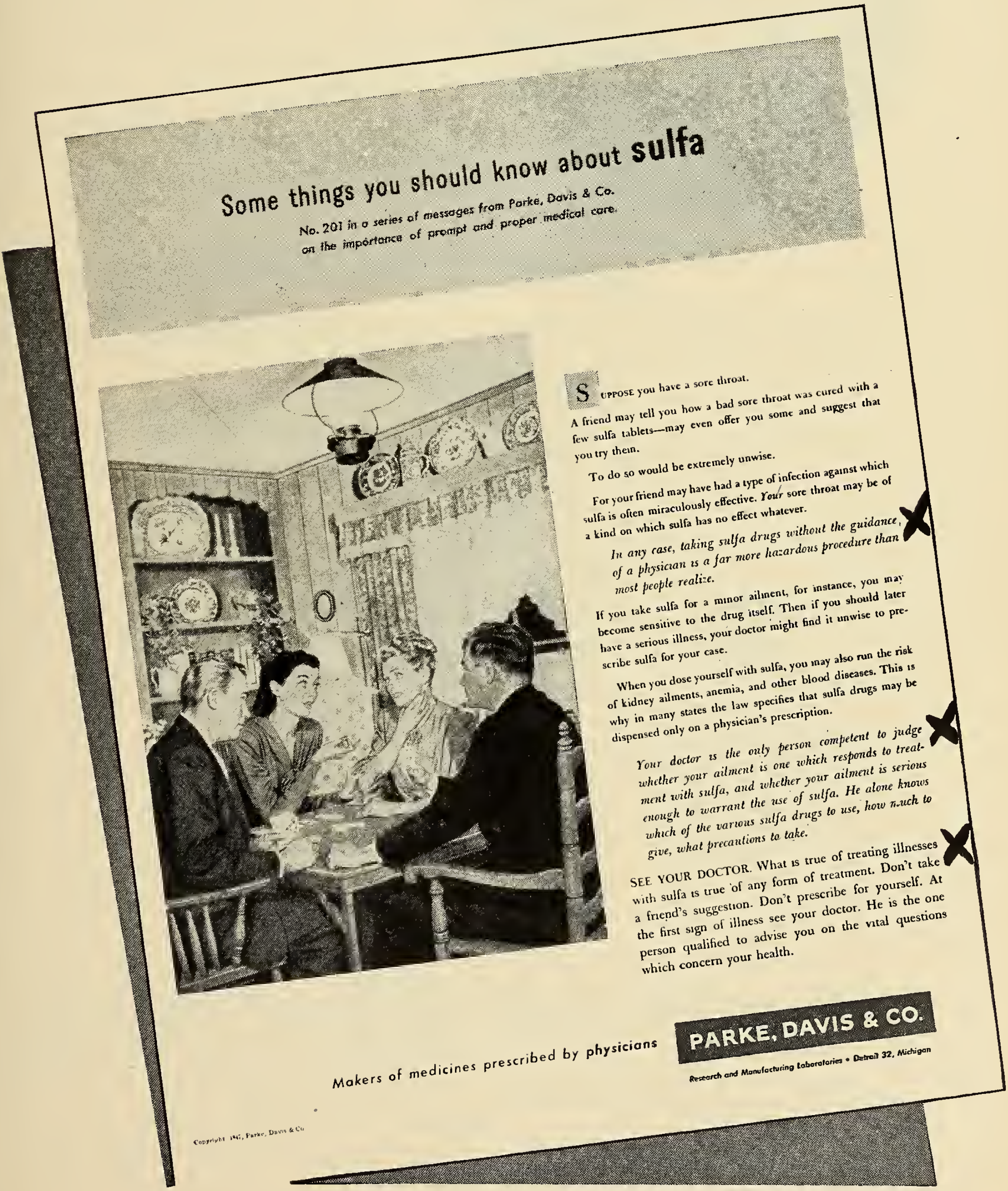

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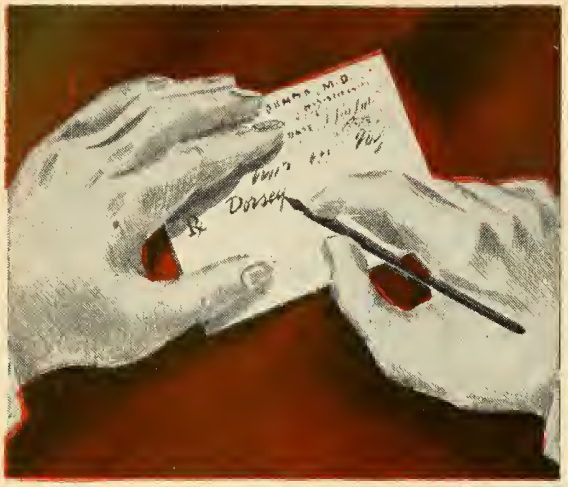

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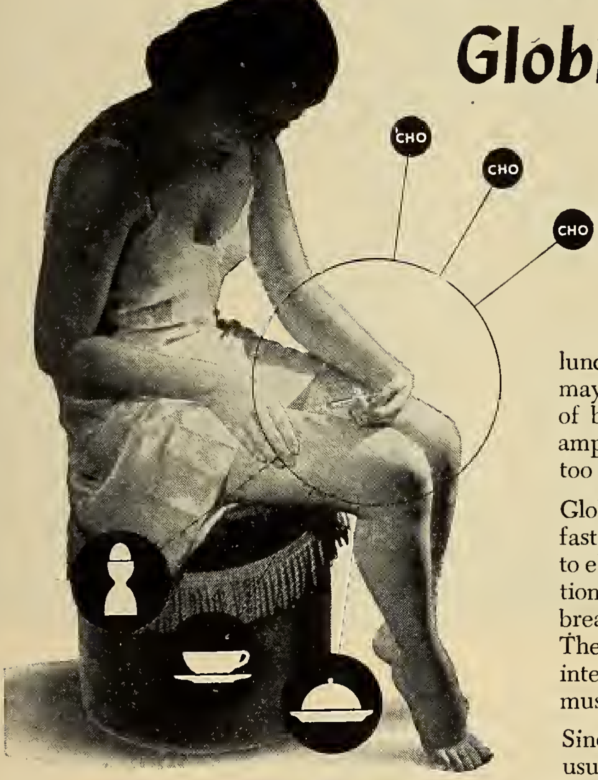
Diabetes, diet and Globin Insulin . . .



THE ADVANTAGES of one-injection control of diabetes can, through adjustment of diet and dosage, be made available to the majority of patients requiring insulin. In view of the convenience and freedom afforded by the unique intermediate action of 'Wellcome' Globin Insulin with Zinc, the necessary adjustment is well worth while. Though not a complicated procedure, the regulation of carbohydrate balance warrants reiteration because of its importance:

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A good carbohydrate distribution for the patient on Globin Insulin is to divide the total carbohydrate per day into 1/5 at breakfast, 2/5 at lunch and 2/5 at suppertime. This initial diet may be adjusted in accord with the indications of blood sugar levels and urinalyses. (For example, a low blood sugar before supper indicates too little carbohydrate for lunch or vice versa.)

Globin Insulin is ordinarily given before breakfast. Onset of action is usually sufficiently rapid to eliminate the need for a supplementary injection of regular insulin. However, the amount of breakfast carbohydrate should not be too large. The right amount, as well as the optimal time interval between the injection and breakfast, must of course be determined for each patient.

Since the maximum action of Globin Insulin usually occurs in the afternoon or early evening, hypoglycemia is sometimes noted at this time. As a guard against it, the carbohydrate content of the noon meal may be increased, or a midafternoon lunch provided. Thus the original distribution of 1/5, 2/5 and 2/5 might, for example, require adjustment to 2/10, 5/10 and 3/10 or to 2/10, 4/10, 1/10 and 3/10. Once the balance of carbohydrate intake and insulin timing has been established, the patient must be impressed with the importance of adhering to the regimen.

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1. Dickinson, R. L.: Techniques of Conception Control. Baltimore, Williams and Wilkins Co., 1942.
2. Eastman, N. J., and Scott, A. B.: Human Fertility 9:33 (June) 1944.
3. Warner, M. P.: J. A. M. A. 115:279 (July 27) 1940.

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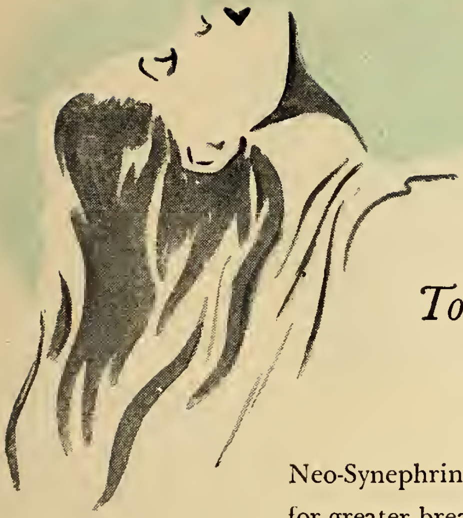

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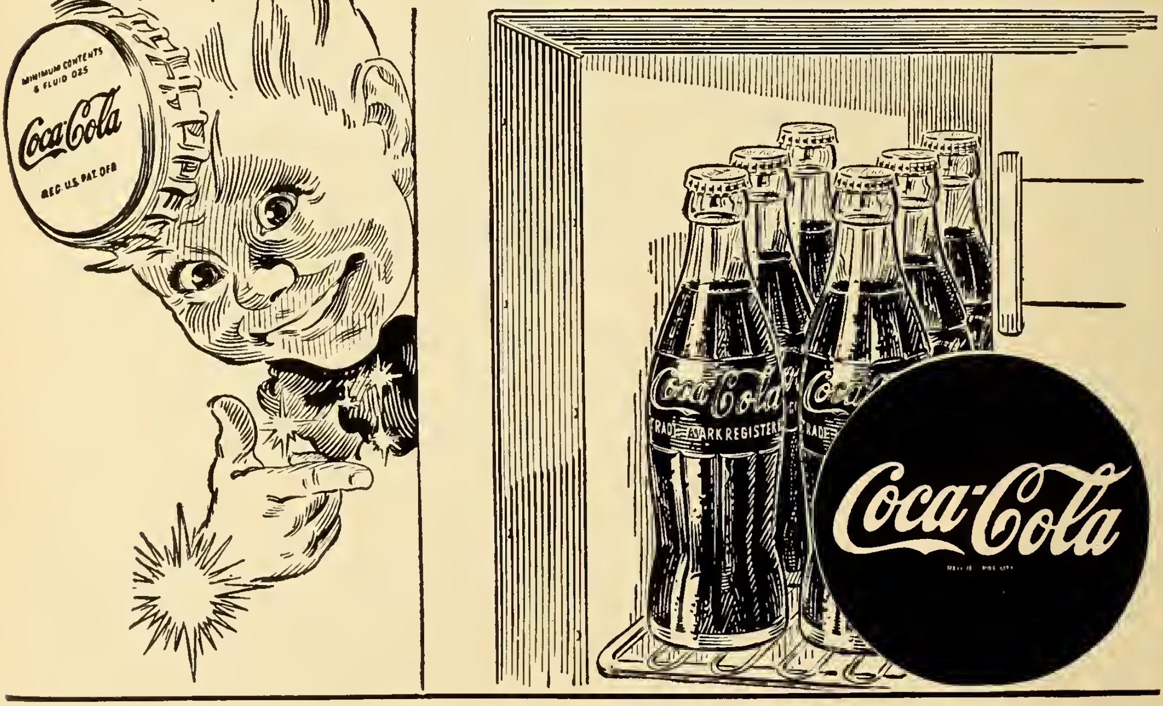
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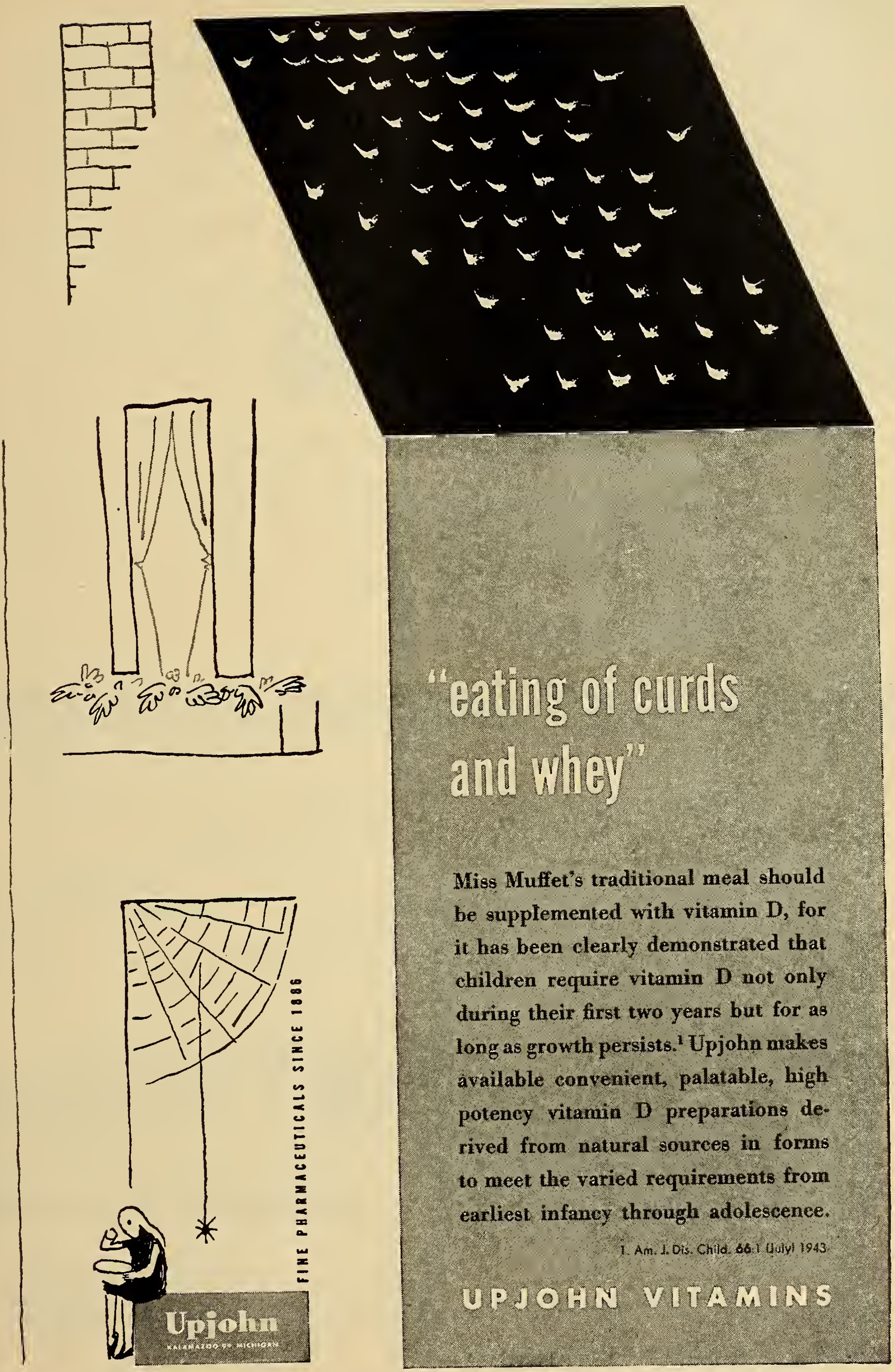
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[1] Am. J. Dis. Child. 66:1 (July) 1943

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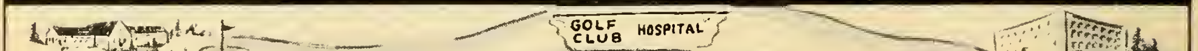
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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 February, 1947 No. 2

THE USE OF INSULIN MIXTURES

RANDALL G. SPRAGUE, M.D., and LAURENTIUS O. UNDERDAHL, M.D.
Rochester, Minnesota

DURING the first fifteen years following the discovery of insulin in 1921, there was a growing appreciation by physicians interested in the treatment of diabetes of the shortcomings of soluble insulin. The principal of these shortcomings are related to its brief, intense action. The results of this inefficient type of action are the necessity for multiple injections each day in the treatment of severe diabetes, the danger of insulin reactions due to precipitous falls of the blood sugar level, and the lapses of control of severe diabetes in the interval between the waning of action of one dose and the injection of the next.

With the introduction of protamine insulin in 1936, and of protamine zinc insulin shortly afterward, the possibility of modifying insulin in the direction of a more prolonged action of lesser intensity was realized. At that time it was hoped that in many of the cases in which multiple injections daily of soluble insulin had been required, the diabetes would remain under satisfactory control with a single injection daily of protamine zinc insulin. Unfortunately, in many cases this hope has not been realized, for reasons which now seem obvious. Protamine zinc insulin does not have sufficient intensity of action to prevent excessive glycosuria following the ingestion of food in cases of severe diabetes, while its continuing action during the fasting hours of the night may result in hypoglycemic reactions while the patient is asleep. Among all the cases in which diabetes is severe enough to require insulin, only the relatively mild ones (usually those requiring 20 units or less daily) are satisfactorily regulated with a single dose of protamine zinc insulin alone with assurance that nocturnal reactions will be avoided.

Thus, it soon became apparent that some compromise between the short, intense action of soluble insulin and the prolonged, weak action of protamine zinc insulin would have greater therapeutic usefulness than either of these two insulins alone. Treatment with both types of insulin injected separately has been widely employed as a means of achieving this compromise, but this method is objectionable because multiple injections are required. Lawrence[3] of London was the first to suggest treating diabetes with a single daily injection of soluble and protamine zinc insulin mixed in one syringe. Following his suggestion, the Section on Metabolism Therapy of the Mayo Clinic has been using such mixtures since 1938 in the treatment of many diabetic patients. Day-by-day clinical observation and controlled clinical investigation by ourselves and others have taught us much about the mode of action and the clinical applicability of such mixtures. The most important single lesson that has been learned from observation of patients is that mixtures containing two or three times as much soluble insulin as protamine zinc insulin are the most suitable for the treatment of diabetes which is severe enough to require the use of mixtures. This observation is corroborated by several experimental studies, notably those of Colwell and his colleagues.[2] The latter investigators showed that definite intermediate effects, in terms of promptness, intensity and duration, are not obtained un-

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From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

Read at the meeting of the Northern Minnesota Medical Assocaition, Crookston, Minnesota, August 24, 1946.

til the mixture contains at least as much soluble insulin as protamine zinc insulin. By increasing the proportion of soluble insulin further, any desired effect intermediate between those of the two kinds of insulin alone can be obtained.

Colwell[1] showed further that when excess soluble insulin is added to protamine zinc insulin in ratios as high as 4:1, virtually no soluble insulin remains in the supernatant, and the mixture has a monophasic action on injection. In simple terms, this means that protamine has a tremendous capacity to combine with insulin, with the result that the insulin in the commonly employed mixtures is in a single complex rather than two (rapid-acting and slow-acting) compounds. Thus, it is not technically correct to speak of the quick action of the regular insulin and the slow action of the protamine zinc insulin in a mixture. The mixture is in reality a single compound which is different from either of the component types of insulin in that the protamine is more saturated with insulin than it is in commercial protamine zinc insuln. The result of such saturaton of protamine is that insulin is released at a more rapid rate than from standard protamine zinc insulin.

Aims of Treatment

Let us digress for a moment to consider the aims of treatment of diabetes with particular reference to the physiologic problem involved in the use of insulin in the treatment of diabetes. The aim of treatment can be simply stated as being the maintenance of health and vigor for a normal span of life. This implies avoidance of acute complications, such as insulin reactions and ketosis, as well as the chronic degenerative complications of the disease, such as retinopathy, neuropathy and intercapillary glomerulosclerosis. At the present time it seems that the treatment which is most likely to achieve the desired end is that which maintains optimal nutrition and reduces the excretion of glucose in the urine to the lowest possible level consistent with a livable program and the avoidance of insulin reactions. Precise control of the level of the blood sugar, which in some cases can be achieved only by frequent injections of insulin and bizarre adjustments of the diet, and in other cases cannot be achieved at all, probably offers no additional advantage. Evidence is accumulating that even the most precise control of diabetes will not always prevent the development of degenerative complications.

The theoretical aim in administering insulin to the patient who has diabetes is to supplement his own endogenous production of insulin in such a way as to imitate as closely as possible the secretion of insulin by the normal pancreas. While there is much that is not understood about the regulation of insulin secretion, a reasonable physiologic hypothesis provides useful guidance in the administration of insulin to patients. Indirect evidence suggests that there are two types of secretion: (1) a continuous slow secretion during fasting, which serves to prevent excessive catabolism of body protein and fat and to maintain the blood sugar at a normal level against the various factors which tend to elevate it, and (2) an augmented secretion following the ingestion of food, which in most persons prevents the excretion of more than small amounts of glucose in the urine. An exact imitation of these mechanisms is impossible to attain, but by skillful employment of quick and slow acting insulins the physician is usually able to achieve a reasonably satisfactory approximation of the normal processes. Obviously, in the treatment of severe diabetes in which most, if not all, of the body's requirement for insulin must be injected, the normal mechanisms of insulin secretion will be better imitated by a type of insulin which provides both rapid and slow actions than they would be by an insulin which provides only one of these.

The principal indication, then, for the use of mixtures of protamine zinc insulin and regular insulin is diabetes of such severity that glycosuria is not adequately controlled and insulin reactions are not avoided by the use of a single morning dose of protamine zinc insulin of moderate size. It would be extravagant to claim that such mixtures solve all the therapeutic problems of severe diabetes, for there still remains a small group of cases in which insulin reactions and poor control of glycosuria continue to be major problems.

Clinical Use of Mixtures

The use of extemporaneous rather than fixed mixtures of the two types of insulin provides necessary flexibility of quick and slow action.* The combined dose is administered in one syringe in the morning before breakfast. As previously stated, mixtures containing two to three times as much soluble insulin as protamine zinc insulin have proved to be the most effective in the treatment of severe diabetes. Of 100 patients who were recently treated with mixtures, the ratio of soluble to protamine zinc insulin was from 2:1 to 3:1, inclusive, in eighty-seven (Table I). The more severe the diabetes, or the higher the carbohydrate content of the diet, the more likely is the ratio to be in the neighborhood of 3:1 rather than 2:1. The strong effects of the mixture prevent excessive glycosuria during the day when food is being ingested, and the prolonged slow effects prevent escape from control overnight.

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*The use of extemporaneous mixtures of protamine zinc insulin and soluble insulin in one syringe calls for precautions to prevent the introduction of one kind of insulin into the other bottle. An appropriate volume of air is first injected into the bottle of protamine zinc insulin and the needle is withdrawn without permitting any insulin to enter the syringe. Then the desired dose of soluble insulin is drawn into the syringe in the usual manner. After this the needle is again inserted into the bottle of protamine zinc insulin and the desired dose is allowed to flow into the syringe, overlying the soluble insulin which is already there. The two kinds of insulin are mixed by drawing a small bubble of air into the syringe, inverting the syringe several times and then expelling the bubble.

TABLE I. MIXTURES OF SOLUBLE AND PROTAMINE ZINC INSULIN IN 100 CASES OF DIABETES MELLITUS

Ratio of soluble to protamine zinc insulin	Cases
1:1 to 1.5:1	5
1.5+:1 to 2−:1	5
2:1 to 2.5:1	62
2.5+:1 to 3:1	25
3+:1 to 3.5:1	2
3.5+:1 to 4:1	1

As pointed out by Colwell,[1] problems of insulin therapy would be simplified by the marketing of a modified insulin having an action like that of a 2:1 mixture of soluble and protamine zinc insulin, in place of the commercial protamine zinc insulin which is now available. Such an insulin would obviate the need for extemporaneous modification in many cases, as it would fill the needs of all the patients who are now successfully treated with protamine zinc insulin alone, as well as of the majority of the patients who are now treated with mixtures. In the few cases in which higher ratios of soluble to protamine zinc insulin are required, supplementation with additional soluble insulin could be readily accomplished in accordance with the needs of the individual patient.

Patients whose diabetes is eventually found to be controllable with mixtures in which the ratio of soluble to protamine zinc insulin is 1:1 or less, usually have relatively mild diabetes, which fares equally well with a single small morning dose of protamine zinc insulin. The use of various kinds of insulin in diabetes of different degrees of severity has been discussed by Wilder[5] and by Sprague.[4]

Adjustment of the Dose

The size of the initial mixed dose in new cases depends on clinical judgment and an estimate of the fundamental severity of the diabetes. For example, if the patient is an adult whose diabetes is anticipated to be basically mild, even though the patient may present himself with fairly intense glycosuria, the starting dose may be of the order of 6 units of protamine zinc insulin and 12 units of soluble insulin. If the diabetes is of greater severity, as is the rule among children, adolescents and young adults, the dose may be of the order of 12 units of protamine zinc insulin and 24 units or more of soluble insulin. Rarely need the total initial dose exceed 60 units. Small children can be expected to respond to smaller doses than young adults. In the absence of ketonuria, caution should be exercised in increasing the dose during the first few days of treatment, for the full effects of the starting dose may not be apparent for several days.

Whatever the initial dose of insulin, subsequent adjustments are made on the basis of frequent tests of the urine for sugar. Until a satisfactory balance is established, the urine is tested four times daily. Once reasonable control has been achieved, further adjustment of the doses of the two kinds of insulin can be made on the basis of two daily tests: (1) The test of a fresh specimen† voided in the morning before breakfast is a satisfactory criterion of the adequacy of the dose of protamine zinc insulin. The dose is adjusted so that there will be no nocturnal insulin reactions and no more than traces of sugar in the morning specimen. (2) The test of a fresh specimen voided late in the afternoon before supper serves as an index of the adequacy of the dose of soluble insulin. The aim is to adjust this dose so that there will be few or no insulin reactions during the day and no more than traces of sugar in this specimen.

When it is necessary to increase or decrease the dose of insulin, the magnitude of the change should depend on several factors. As a rule, the larger the dose, the larger the change should be. Since most mixed doses will contain approximately twice as much soluble insulin as protamine zinc insulin, the magnitude of change of the two kinds of insulin is kept in about the same proportion

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†Only if the urine has been recently secreted by the kidneys will the urine tests provide accurate information about the state of the diabetes at the time when the test is made. To this end, the patient is instructed to empty the bladder about thirty minutes before collecting the specimen for testing.

For example, the soluble insulin may be changed 4 units at a time, and the protamine zinc insulin 2 units at a time. Very large doses of soluble insulin may be raised or lowered 6 or 8 or more units at a time. Some small children, and a few adults, are so sensitive to small changes that alterations in steps of more than 2 units may be inadvisable.

Any rules for adjustment of doses must be modified to suit the vagaries of the individual case. In some cases of severe diabetes, for example, once preliminary regulation has been completed and tolerance has become stabilized, it may be wise not to alter the doses of the two kinds of insulin in spite of occasional intense glycosuria or mild insulin reactions, since such transient fluctuations may be due to factors other than insulin. Among these factors are emotional disturbances, irregularities of rate of absorption of insulin from different sites of injection, and variations of food intake and physical activity. A sound principle in such cases is to find a dose of insulin which provides adequate control on most days and adhere to it until there is good reason to make a change.

Most physicians have had experience with cases of severe diabetes in which glycosuria is not satisfactorily controlled and insulin reactions are not avoided throughout the twenty-four hours by the use of a single mixed dose of protamine zinc insulin and soluble insulin. Control in such cases is sometimes improved by the addition of a small dose of soluble insulin before supper. Usually this dose need not exceed 10 or 12 units. Adjustments of dose are then made chiefly in the soluble insulin taken in the morning and evening, for the dose of protamine zinc insulin can usually be kept small and requires little or no alteration. The afternoon test of the urine, and insulin reactions occurring during the day, are the guides for adjustment of the morning dose of soluble insulin. The evening dose of soluble insulin is adjusted on the basis of the morning test of the urine and nocturnal reactions.

Summary

Mixtures of protamine zinc insulin and soluble insulin in proper proportions provide both quick, intense action and slow, prolonged action. They are more effective than either of the two component insulins alone in most cases of moderately severe to severe diabetes. A proper proportion in most instances is between 2 and 3 units of soluble insulin to 1 unit of protamine zinc insulin.

Such mixtures attain their greatest effectiveness in those cases of moderately severe diabetes which have long been recognized as being reasonably easy to treat by a variety of therapeutic programs involving multiple doses of soluble insulin. They do not solve all the problems of insulin therapy in patients who have severe, "brittle" diabetes of the type which has always been difficult to control with any program of treatment.

Extemporaneous mixtures have the advantage of flexibility, which makes them adaptable to a variety of cases. Such flexibility is desirable as it has not been possible thus far to produce any single modification of insulin which will fill the needs of all cases of diabetes. However, a modified insulin having an action like that of a 2:1 mixture of soluble and protamine zinc insulin could be used without modification in many more cases than the standard protamine zinc insulin which is now available. It could be further modified by the extemporaneous addition of more soluble insulin when necessary.

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ATOMIC ENERGY—ITS MEDICAL APPLICATION

A problem of extraordinary importance is before the Council on Physical Medicine and the Council on Industrial Health of the American Medical Association, namely, atomic energy and its medical applications.

At a joint meeting of the two Councils, specialists on roentgen rays, radium and atomic energy discussed a long-range program for considering the products, the problems and the means of disseminating information.

The Council on Industrial Health decided to sponsor articles on the dangers associated with the manufacture of radioactive material. The Council on Physical Medicine voted to prepare articles for publication in *The Journal of the American Medical Association* on the therapeutic and diagnostic uses of radioactive isotopes.

THE PRESENT SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Its Antecedents, Purposes and Character

CARLE B. McKAIG, M.D.
Pine Island, Minnesota

IT is said that excessive preoccupation with the past is an indication of senility and, no doubt, this is true. Age dreams of the past while youth anticipates the future with eagerness. However, I believe that a reasonable pride in our history and tradition is commendable, and our organization has a history of which we may well be proud.

The older members of the association are familiar with its history. There are, however, those who have become members since the history was last reviewed. This was in 1935, when Dr. M. C. Piper presented an excellent historical sketch. It is for the newer members particularly that I present this review.

The present Southern Minnesota Medical Association was formed August 3, 1911, at Rochester. It was brought into being by merger of the Minnesota Valley Medical Association and the old Southern Minnesota Medical Association. The organization thus formed was given the name of the latter component association.

The Minnesota Valley Medical Association

The Minnesota Valley Medical Association, the older of the two components, was organized December 1, 1880, at Le Sueur Center. A preliminary meeting had been held the previous October in Le Sueur Center.

It is said that the plan for the organization originated with the physicians of Mankato. However, Dr. Otis Ayer, of Le Sueur Center, took the initiative to the extent of writing to a number of physicians, requesting their presence at the organizational meeting. The original plan specified that there were to be two meetings a year, one of which always was to be held in Mankato.

This organizational meeting was held sixty-six years ago. To correlate it with national events, let me point out that this was only fifteen years after the close of the Civil War. President Garfield was in office. The great Indian War of the Northwest was just over, and the country was still mourning those who had died at the Battle of the Little Big Horn, in 1876, just four years before. To correlate the organizational meeting with contemporary medical history, 1880 was the year in which Lord Lister introduced the use of catgut in surgery of the vascular system. Only thirteen years had passed since he had published his revolutionary paper, "On the Antiseptic Principle in the Practice of Surgery," which marked the beginning of modern surgery.

Medical education in the United States was in a chaotic state and momentous changes were taking place in medical knowledge and practice. The earnest men who formed the Minnesota Valley Medical Association truly appreciated the vital need for an organization which would further medical knowledge.

Transportation was an important factor and was necessarily by railroad. Hence, it was planned that the membership of the Minnesota Valley Medical Association be drawn, in a general way, from those communities which lay along the "Omaha Road," as one portion of the Chicago and Northwestern Railroad was called in those days. There were thirteen charter members but, by 1883, the members numbered forty-five. Dr. Otis Ayer was elected the first president. He had been surgeon to the Second Minnesota Regiment of Volunteers and he became president of the Minnesota State Medical Association in 1877. He died in 1889.

Dr. C. F. Merritt, of St. Peter, was first treasurer and continued to hold this office through the entire existence of the association, and also after its merger with the Southern Minnesota Medical Association, until his death in 1921.

At the time of the merger, in 1911, Dr. E. J. Davis, of Minnehaha, presented a brief historical sketch of the Minnesota Valley Medical Association. He recalled that the original programs had consisted entirely of reports of cases. Each member in turn described cases he had encountered in his practice since the last meeting and the entire membership then discussed each case. Later, the meetings came to assume a more formal character, with prepared papers and open discussion following.

Presidential Address, Southern Minnesota Medical Association, delivered at Faribault, Minnesota, September 9, 1946.

In the same sketch, Dr. Davis also pointed out that inasmuch as money was very scarce and hard to obtain in those days, no avoidable expense was incurred by the association. In this matter, the interests of the young physician were being considered particularly, as it was thought that he needed the association most and he had the least money to pay for its maintenance. It was thought that everything should be done to encourage his attendance. There were no banquets for this reason. The annual dues were 50 cents, with an extra assessment of 50 cents whenever the treasury was empty.

In 1880, wheat sold for 87 cents per bushel, but beef brought $3.66 per hundred weight, and pork $5.10 per hundred weight. This was the economic background against which the Minnesota Valley Medical Association was founded.

Members of the association were all pioneers; many were former army surgeons, and some had been Indian fighters. Their origins were largely in the East. Some were Europeans. They were truly representative of the original stock of the State of Minnesota. The association was the first district medical organization in the state.

The Old Southern Minnesota Medical Association

The second of the two original component societies, the Southern Minnesota Medical Association, was formed in Winona on July 26, 1892. Agitation for formation of this organization apparently had existed for a long time. For instance, Mrs. N. H. Guthrie, of the Mayo Clinic, while engaged in research on the history of medicine in Minnesota, discovered an item in the *Rochester City Post* for January 16, 1869. Therein it was reported that a communication had been received by the Olmsted County Medical Society, from Dr. Youmans, of Winona, advocating that the Olmsted County Medical Society, which had been formed only the previous year, be enlarged to include all Southern Minnesota.

At the first meeting of this old Southern Minnesota Medical Association, a program of five papers was presented. It was as follows:

Cerebrospinal meningitis—Dr. McGaughey, Winona

Less common forms of surgical tuberculosis—Dr. W. J. Mayo, Rochester

Endometritis—Dr. W. T. Adams, Elgin

Hypertrophic rhinitis—Dr. H. H. Witherstine, Rochester

Consideration of the knee jerk symptoms—Dr. R. M. Phelps, Rochester

The meetings rotated among Winona, Rochester and Owatonna, and were held annually.

One of the duties of the secretary was to canvass the members for papers to be presented at the annual meeting. Apparently the response was good because the papers presented were, for the most part, by the members themselves. I think our present membership might take a lesson from this and give a better response to the request of the program committee for papers. It is becoming increasingly difficult for the committee to obtain papers from the members. During the entire eighteen years of the existence of the old Southern Minnesota Medical Association, there were only two secretaries: Dr. Adams, of Elgin, and Dr. Witherstine, of Rochester.

The New Southern Minnesota Medical Association

The Minnesota Valley Medical Association and the old Southern Minnesota Medical Association existed side by side for eighteen years. There was considerable duplication of function and overlapping of territory. Many physicians were members of both. A merger of the two associations obviously was indicated and was effected, as has been said, on August 3, 1911, thirty-five years ago, at a meeting in Rochester. An entirely new society was formed but the name, Southern Minnesota Medical Association, was retained, as has been pointed out. This name was considered appropriate because the object of the organization was to serve the needs of members of the medical profession in the southern part of the state.

Dr. L. A. Fritche of New Ulm was the first president of the new society. Following the merger, the society grew rapidly. Programs became elaborate and meetings extremely well attended. Many national figures appeared on the programs. For instance, in 1914, the guest speakers included Dr. Bertram W. Sippy, Dr. Dean Lewis, Dr. Allen B. Kanavel, Dr. Oliver S. Ormsby, Dr. H. M. McClanahan, Dr. James S. Goetz, and Dr. Arthur D. Dunn.

In 1919 it was apparent to many members that the association had become too large and its pro-

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GLOMUS TUMORS

Report of Two Cases

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GLOMUS tumors may cause excruciating pain. Because of their rarity they may remain unrecognized for years. Recently we have operated on two patients who had glomus tumors of nine and sixteen years' duration, respectively. In each case there was complete relief of symptoms. Early diagnosis and eradication are dependent on the recognition of the lesion by the general practitioner when he is consulted.

Glomus enlargements, or arteriovenous shunts, occur normally in skin and subcutaneous tissue. They occur most frequently in the finger tips, where they regulate temperature when the hands are exposed to cold. With increased growth of these tumors, they become excruciatingly painful. They are usually located under the nail in the visible part, or as far back as the root of the nail under the skin, where they may be more obscure. The most common source of histologic material for the study of the glomus has been the foot of the goose, where the glomus attains a large size normally and maintains the temperature of the foot. These shunts never have been found in cold blooded animals such as the reptiles.

Mason and Weil[5] have written the most comprehensive report on glomus tumors. They stressed the wide distribution of the tumors aside from the usual subungual location. They found the tumors located over the acromion, on the palmar surface of a finger, in the forearm, in the arm at the insertion of the deltoid, in the thigh, in the leg, in the knee joint, under the toenails and in the sole of the foot. The essential finding which should lead one to suspect a glomus tumor is any very painful, discreet region of trigger-like pain, where a small grayish blue or reddish purple nodule can be palpated or seen. In the differential diagnosis, subungual hematoma, fibroma, epithelioma, angioma, neuroma and melanoma have been mentioned, but in none of these is there the typical paroxysm of pain.

Treatment of the lesion consists in simple excision. The tumors are well encapsulated and easily shelled out. Occasionally the tumor may be very tiny and found with difficulty. In these cases Love[2-4] uses the "pin test," consisting of locating the tumor by means of a sharp pin; after it is found, the pin is left in place while nerve block is performed with procaine at the base of the finger. In this manner, the lesion can be completely removed, as its exact location is known.

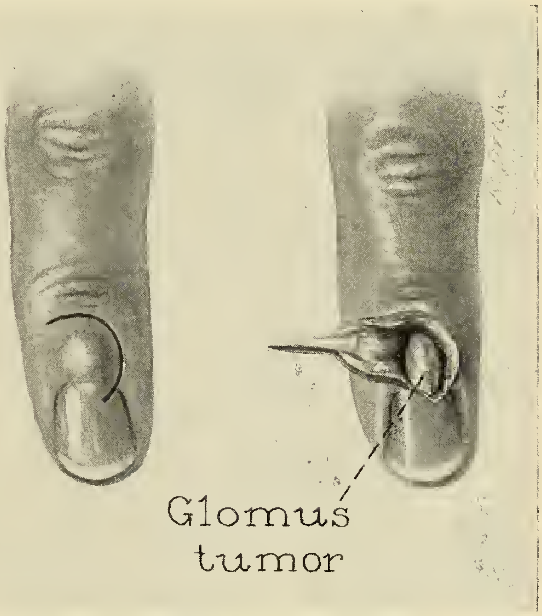

Fig. 1. Position and small size of glomangioma, also incision for removal. The majority of these tumors are subungual.

The tumors are essentially neuromyo-arterial nodules in the subcutaneous tissue as described by Dockerty.[1] The arteriovenous short circuits consist essentially of (1) an afferent arteriole, (2) an efferent venule, (3) various small connecting loops lined by endothelium, the canals described by Sucquet-Hoyer. These canals can be opened or closed quickly as a result of local nerve reflexes. The nodules are usually very small bluish ones that are exquisitely tender. Microscopically, there are anastomosing vascular spaces, some with thick walls, others with thin walls. Around these vessels there are numerous small cells, which resemble nevus cells (small with oval nuclei, small nucleoli and speckled chromatin). Some pathologists consider these cells to be endothelial in ori-

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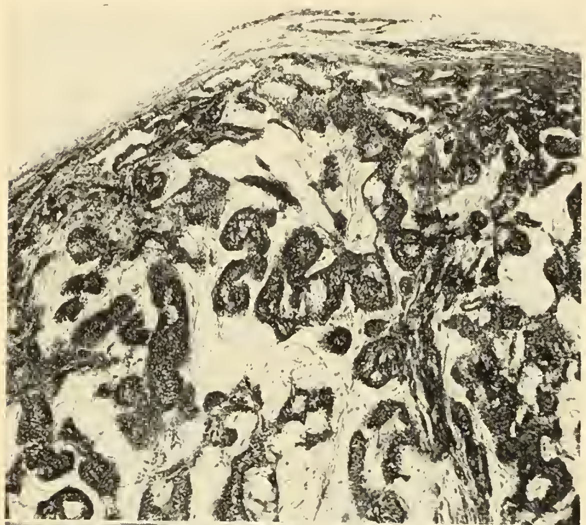
gin; others consider them to be epithelioid cells or even myoblasts. Smooth muscle and nerve fibrils may be seen intermingled with the other elements. The presence of oval, dark-staining cells in a vascular network with occasional nerve fibers and end organs should determine the diagnosis.



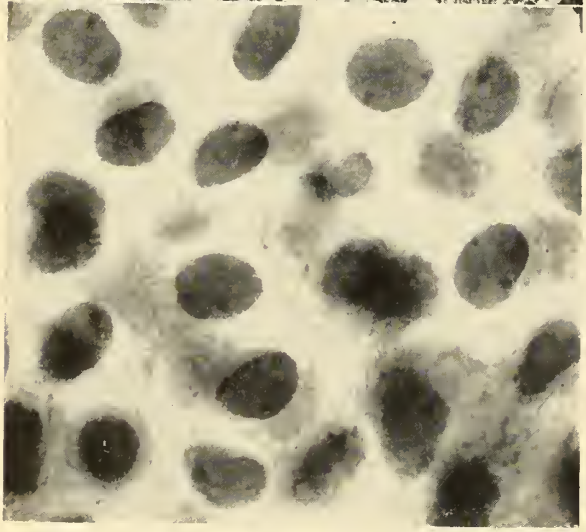


Fig. 2. *(above)* Encapsulated glomangioma showing the general architecture with small nests of nevus-like cells in a myxomatous stroma. Several dilated vascular canals are visible at the top of the photograph (× 35).

Fig. 3. *(below)* High power detail of the endothelial, nevus-like cells comprising the bulk of the tumor (× 1,300).

Report of Cases

Case 1.—A housewife, forty years of age, reported at the Mayo Clinic with a history of an excruciatingly painful region of the right fifth finger, which was located under the base of the nail bed and had been present for nine years. The pain occurred with any pressure on this region and even the weight of the bedclothes would awaken her at night. The pain was trigger-like, sharp and shooting and extended up the finger as far as the proximal phalangeal joint. She had noticed that the tumor turned reddish purple and enlarged during the painful spasm. With time, it had shown a slow increase in size and had become more painful. If she struck the finger the pain was so intense that she would turn pale and become faint. It was necessary to immerse the hand in as hot water as she could stand in order to obtain relief from her pain. The pain was more readily precipitated during cold weather than at other times. She had consulted a number of physicians during the nine years prior to admission and a diagnosis of arthritis of the terminal joint of the fifth finger had been made. She avoided shaking hands and was in constant fear of the recurrent paroxysms of pain. Physical examination revealed a small dusky red tumor under the right fifth subungual region. Almost all of it was lying under the cover of the skin at the base of the nail (Fig. 1).

The tumor was removed while the patient was under regional procaine block and tourniquet. A curved incision was used, incising part of the nail and extending up into the skin. Immediately beneath the upper part of the matrix could be seen a firm, grayish, rounded tumor, 5 mm. in diameter, which was dissected free and removed in toto. The grayish color of this tumor resulted from pressure under the nail and the tourniquet. The pathologist reported this tissue as an encapsulated subungual glomangioma (Figs. 2 and 3). The incision healed by primary intention and the patient experienced complete relief of symptoms.

Case 2.—A housewife, forty-two years of age, complained of a painful tumor located on the mesial aspect of the distal phalanx of the left index finger, which had been present for more than sixteen years and had interfered with her work. It had been operated on twice, the last time being about fourteen years prior to her admission at the Mayo Clinic. However, the tumor had not been located and the patient had not obtained relief of symptoms. Examination revealed a mass of scarlike tissue, which was tender on palpation. The roentgenograms showed this mass to be confined to the soft tissues. The roentgenograms of the lungs were negative. The blood count, urinalysis and flocculation test gave negative results. Excision of the tumor was performed while the patient was under regional procaine block and tourniquet. A small nerve and a blood vessel were seen entering the scarlike mass proximally. These were cut and tied. The surgeon suspected that the lesion was a neurofibroma but when the pathologist examined the tissue, he found that it was a glomus tumor. The tumor itself was very small, 1 mm., and was surrounded by fibrous tissue from previous operations. A number of sections had to be cut to find the hemangiomatous tissue with the typical oval, dark-staining cells of a glomus tumor. The incision healed by primary intention and the patient obtained relief from her symptoms.

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CHRONIC MASTOIDITIS WITH CHOLESTEATOMA AND STENOSIS OF THE EXTERNAL AUDITORY MEATUS

Report of Two Cases

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IT IS well known that stenosis of the external auditory canals presents a diagnostic problem in cases in which pain or discharge is present. The following cases are presented with two purposes in mind: first, to call attention to this difficult diagnostic problem, and second, to emphasize the importance of adequate drainage in cases of chronic otitis media.

Stenosis of the external auditory canal may be congenital, in which case the patient has no symptoms referable to the ear and it is usually possible to insert a small ear speculum and obtain a reasonably satisfactory view of a normal tympanic membrane. Acute otitis externa frequently produces such swelling in the auditory canal that inspection of the tympanic membrane is impossible. In these cases the disease is of short duration, the pain is localized in the ear itself and there is pain on moving the auricle or pressing on the tragus. If a small speculum can be inserted and the discharge cleaned out, the hearing is found to be normal.

When stenosis is produced by chronic otitis media, there will be a long history of discharge from the ear. The pain is more deep-seated, the patient usually complains of deep headache in the temporal and mastoid region, and the hearing is usually much diminished. There is no pain on movement of the auricle but there may be a deep mastoid tenderness.

Report of Cases

Case 1.—A white man, aged twenty-two years, registered at the Mayo Clinic on April 16, 1946. He complained of discharge from the left ear since the age of six years. At that time he had a head injury, was not unconscious but was "dazed" for a day or two. He did not remember whether there was bleeding from the ear at that time. There had been a constant dull ache in the ear for a long time with occasional exacerbation of more severe pain. At the time of examination he was having severe steady pain in the ear and left side of the head.

Examination revealed almost complete stenosis of the left external auditory canal with purulent, foul smelling discharge present. There was profound conduction type deafness on the left. General physical examination gave negative results. On roentgenographic examination, sclerosis of the left mastoid was observed. On April 18, 1946, the left mastoid was explored through a postauricular incision. Hypertrophic osteitis had caused considerable sclerosis but there were still a large number of cells present, all of which contained pus under pressure. These cells were uncovered in the mastoid tip, behind and above the knee of the sigmoid sinus. In the region of the mastoid antrum a large abscess had uncovered the dura of the middle fossa. A tract of infected cells was explored inferior to the labyrinth leading toward the petrous apex. In the middle ear, medial to the stenosis of the external canal, was a large cholesteatoma. This was removed. The cholesteatoma had caused a large cavitation in the middle ear and adjacent tissues. Radical mastoidectomy was completed by removing the posterior bony wall of the external canal, making one cavity of the external canal, middle ear and mastoid cavity. A plastic skin flap was cut in the membranous canal and turned back into the cavity, which was lightly packed with vaselin gauze. The wound was tightly closed.

The patient's postoperative course was smooth and uneventful. Penicillin, 160,000 units daily, was administered. He was dismissed from the hospital on the eighth postoperative day and observed in the clinic for three weeks. All discomfort and pain had disappeared.

He was seen again two months later, at which time he felt well and made no complaints. The cavity had become almost completely epithelized.

Case 2.—A white, married woman, aged thirty-nine, registered at the Mayo Clinic on April 15, 1946. She gave a history of purulent discharge from the right ear since an attack of measles when she was eight years old. In the past five years she had had four exacerbations with severe pain, lasting about three weeks and relieved when the ear discharged profusely. During these episodes the pain was worse at night than during the day.

Examination revealed severe stenosis of the right external auditory canal with purulent discharge present. The stenosis prevented examination of the tympanic membrane. There was a moderately severe conduction type deafness on the right. General physical examination revealed mild asthmatic bronchitis and rheumatic mitral endocarditis. On roentgenographic examination partial sclerosis of the right mastoid was observed.

Exploration of the right mastoid process was done on April 20, 1946. There was extensive cellular development and the intercellular septa were sclerosed. The cells contained greenish brown fluid and thickened mucous membrane. Cells were removed in the tip, around

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FURTHER OBSERVATIONS ON THE PROGNOSIS IN ANGINA PECTORIS DUE TO CORONARY SCLEROSIS

A Study of 405 Patients Who Survived Ten or More Years

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IN MAY, 1946, Parker, Dry, Willius and Gage[1] reported on the survival rate of 3,440 patients who had angina pectoris due to coronary sclerosis.

The conclusions of this study, in effect, were: (1) the highest mortality rate occurs in the first years after the onset of the disease; (2) the survival rate was definitely lower when the disease manifested itself before patients were forty years old than when they were older; (3) the survival rate of females was greater than that of males; (4) when sclerosis of the choroidal arteries was associated, the five-year survival rate was much lower than it was when this condition was absent, and (5) associated cardiac hypertrophy, hypertension (especially hypertension of groups 3 and 4 of the Keith and Wagener[2] classification), previous myocardial infarction, congestive heart failure and significant electrocardiographic abnormalities (particularly conduction defects and disturbances of rhythm) all influence prognostic trends adversely. Attention was drawn to the curious observation that the inverted $T_{1,2}$ pattern seems to be associated with a less favorable prognosis than all other types of inverted T wave patterns.

Among this group of 3,440 patients were 405 who had survived ten years or longer after the diagnosis of angina pectoris was made at the Mayo Clinic. The following report is based on a more detailed analysis of this group. A study of data about patients who have survived for a long time has the advantage of providing a viewpoint in retrospect which serves to reflect prognostic trends.

When information concerning these 405 patients was last received, 281 (69.4 per cent) of the group were still living; fifty-four (13.3 per cent) were known to have died of cardiac disease; eighteen (4.4 per cent) had died of other disease, and fifty-two (12.8 per cent) had died of unknown causes.

TABLE I. AGE OF PATIENTS AT TIME OF DIAGNOSIS OF ANGINA PECTORIS AT THE CLINIC.

Age of patients, years	Cases	Per cent
20-29	2	0.5
30-39	11	2.7
40-49	96	23.7
50-59	177	43.8
60-69	109	26.9
70-79	9	2.2
80-89	1	0.2
Total	405	100
Mean age	55.1 years	

In general, the age distribution at the time of diagnosis at the clinic of this long-surviving group (Table I) was similar to that noted by Parker and his co-workers[1] for the entire group, the average age being four years younger. However, the sex ratio shows an interesting change, for, whereas it was reported as 4.3 males to 1 female for the whole group, we found that, of the 405 patients who survived ten years, 292 were men and 113 were women, a ratio of 2.6 to 1. This change in the sex ratio reflects emphatically the well-known fact that females who have the disease survive much longer than males who have the disease.

As in the original study, we found that those patients who had cardiac enlargement, congestive heart failure and the more severe type of hypertension, and those who had choroidal sclerosis, did not fare well. They were poorly represented among these long survivors. Thus, only sixty-eight (16.8 per cent) of the 405 patients were found to have had cardiac enlargement; only ten patients (2.5 per cent) gave a history indicative of an episode of congestive failure; only seventy-nine patients (19.5 per cent) had hypertension, and none of these had hypertension group 3 or 4. In only fifteen of 237 cases in which a record of funduscopic examinations was found, was sclerosis of the choroidal arteries present at the time of the original diagnosis of angina pectoris at the clinic.

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Influence of Acute Myocardial Infarction

At the time of the original diagnosis of angina pectoris at the clinic, seventy-one patients (17.5 per cent) had had previous coronary occlusion. Only 3.7 per cent of the patients in the group are known to have had coronary occlusion subsequently. While others may have had unrecognized or unreported episodes of myocardial infarction, the number is impressively small among those who survived for ten years or longer after the diagnosis was made at the clinic. Isolated instances of multiple infarction among the long survivors provide the exception that proves the rule.

Electrocardiographic Findings

A detailed study of the electrocardiograms was made in these 405 cases in an effort to determine what, if any, are the significant changes that may occur which would aid the physician in giving a correct prognosis to the patient suffering from angina pectoris.

In 236 cases (58.3 per cent) in this group, the initial electrocardiagram was considered to be normal. The electrocardiographic abnormalities among the remainder consisted mainly of (1) inversions of the T wave, which can be considered to be either relics of acute myocardial infarction or the result of hypertension; (2) auriculoventricular and intraventricular conduction disturbances of various types, and (3) disturbances of rhythm (Table II). The relative infrequency with which the initial electrocardiogram revealed conduction disturbances, and the infrequency with which it revealed ectopic rhythm in this long-surviving group, reflect a significant prognostic trend and need no further comment. As far as abnormalities of the T wave are concerned, the point worthy of re-emphasis is the infrequency (seven cases) with which the inverted $T_{1,2}$ pattern occurs in this group in comparison with all other abnormalities of the T wave. There were thirty cases in which the electrocardiographic findings became normal after having been found to be abnormal initially. In only one was the original abnormality an inversion of the $T_{1,2}$ waves. The remainder of the abnormalities were divided about equally among T_1 inversion, $T_{2,3}$ inversion and $T_{1,2,3}$ inversion. What makes this fundamental prognostic difference between this $T_{1,2}$ pattern on the one hand and the T_1 pattern (and for that matter other combinations of inversions of the T waves) on the other, is difficult to explain.

TABLE II. ELECTROCARDIOGRAPHIC FINDINGS AT TIME OF DIAGNOSIS IN PATIENTS SURVIVING TEN YEARS OR MORE WITH ANGINA PECTORIS.

Electrocardiographic findings	Cases*	Per Cent
Normal	236	58.3
Inverted T^{1}	44	10.9
Inverted $T^{1,2}$	7	1.7
Inverted $T^{2,3}$	43	10.6
Inverted $T^{1,2,3}$	14	3.4
Left bundle-branch block (concordant)	9	2.2
Left bundle-branch block (discordant)	1	0.2
Right bundle-branch block	0	—
Wide S wave	2	0.5
Complete heart block	0	—
Delayed auriculoventricular conduction	3	0.7
Auricular fibrillation	3	0.7

*No totals are given because several of the noncontributory electrocardiographic classifications are omitted.

In 154 cases, subsequent electrocardiograms were available for further study and for comparison with those obtained at the clinic at the time of the diagnosis of angina pectoris.

It is noteworthy that in sixty-seven cases in which the original electrocardiogram was normal, no significant changes occurred in the subsequent electrocardiograms. These sixty-seven cases comprised 70 per cent of those in the group of 154 cases in which the original electrocardiogram was normal. Moreover, in half of the cases in which the electrocardiographic findings were originally abnormal, they were found to have returned to normal at a subsequent examination. This illustrates the tendency for the electrocardiographic findings to remain normal or to return to normal among the long-surviving subjects with angina pectoris due to coronary sclerosis.

The prognostic trend in so far as the electrocardiographic criteria are concerned is reflected further by comparing the five-year survival rate of all patients who had angina pectoris due to coronary sclerosis with the survival rate among our group who lived ten years or longer (Table III).

Comment

The normal heart possesses collateral channels which may, for the most part, remain functionless until occlusive changes in the main arteries or their branches stimulate them to supplement

TABLE III. FIVE-YEAR AND TEN-YEAR SURVIVAL RATES OF PATIENTS HAVING ANGINA PECTORIS ACCORDING TO ELECTROCARDIOGRAPHIC CLASSIFICATION.

Results of Electrocardiogram	Traced Patients*†	Lived Five or More Years Following Diagnosis at Clinic		Traced Patients*†	Lived Ten or More Years Following Diagnosis at Clinic	
		Number†	Per Cent		Number†	Per Cent
Normal	1,112	772	69.4	571	236	41.3
Inverted T_1	445	190	42.7	214	44	20.6
Inverted $T_{1, 2}$	228	51	22.4	130	7	5.4
Inverted $T_{2, 3}$	363	174	47.9	181	43	23.8
Inverted $T_{1, 2, 3}$	140	54	38.6	61	14	23.0
Left bundle-branch block (concordant)	126	39	31.0	65	9	13.8
Left bundle-branch block (discordant)	102	33	32.4	19	1	5.3
Right bundle-branch block	5	2	40.0	1	0	——
Wide S wave	25	14	56.0	8	2	25.0
Complete heart block	4	1	25.0	2	0	——

*Inquiry as of January 1, 1942. The five-year group includes only those cases in which the diagnosis of angina pectoris was made five or more years prior to the time of inquiry, that is, 1936 or earlier; the ten-year group includes only those cases diagnosed in 1931 or earlier.

†No totals are given because several of the noncontributory electrocardiographic classifications are omitted.

the arterial supply to the myocardium. Herein might lie congenital or hereditary factors which decide the fate of the individual patient who has coronary arteriosclerosis and its complications. Because coronary sclerosis is inevitable with aging and at times is accelerated by coexistent disease, such as hypertension, diabetes, obesity or myxedema, the future course can well be pictured to depend on which process—the occlusive or the supplemental—exhibits the greater potentiality toward progression.

Given an instance in which the arteriosclerotic process in itself is diffuse and rapidly progressive or in which the anatomic arrangement of the main coronary arteries is such that the left ventricle receives its blood supply almost entirely from one or the other of the coronary arteries (thus vitiating the establishment of adequate supplemental circulation should this important channel become sclerotic) or in which the clinical course is punctuated by repeated episodes of myocardial infarction, the outlook must of necessity be unfavorable. However, given an instance in which the occlusive process is slow or limits itself to a minor branch of a coronary artery, in which the groundwork for collateral circulation is unusually adequate because of a fortuitously favorable anatomic arrangement of the coronary vessels or in which factors capable of aggravating arteriosclerosis are absent, the outlook is more favorable and acute myocardial infarction constitutes a much less hazardous event. It is possible that a minor occlusive episode in certain instances such as these, may even stimulate the establishment of collateral circulation. Therefore, the fact that the mortality rate is high in the earlier years after the inception of this disease is understood readily. In those cases in which the coronary circulation is prepared against the effects of both gradual and sudden interference with arterial supply the patients can be expected to survive this stormy period.

Finally, we can speculate, with some reservations, on the degree to which treatment influences prognosis. Given a large number of patients suffering from the same disease who can be assumed to receive essentially the same treatment what, other than natural endowments inherent in coronary circulation, could account for the wide variation in the subsequent course? One answer might well be the difference in ability of patients to make the necessary physical and psychologic adjustments which the disease imposes. The limiting effect of anginal pain ordinarily precludes overindulgence in physical activity. Unfortunately, this is not always true of overindulgence at the table. Still less can we expect successful psychologic adjustments in patients already in middle age or older, whose habits have become fixed, who often have reached the most responsible part of their life and who inherently fear the possibility of a cardiac disorder. Fear, as a potent vasoconstrictor, can only influence the successful establishment of collateral circulation adversely and perhaps to an extent more lastingly than some other environmental influences, not excluding excesses in some habits.

Summary and Conclusions

In this report, data concerning 405 cases in which the patients survived ten years or longer after the diagnosis of coronary sclerosis and angina pectoris were analyzed.

The ratio of men to women in this group was 2.6 to 1.

This study further revealed that cardiac enlargement, coronary occlusion and congestive heart failure, when associated with angina pectoris, definitely increase the mortality rate. The infrequent occurrence of choroidal sclerosis in this group indicates that it is an unfavorable prognostic finding.

Not a single patient with hypertension, group 3 or 4, was represented in this long-surviving group.

The number of cases in which electrocardiographic findings were normal in this group was high. In addition, when initial and subsequent electrocardiograms were compared a tendency of the electrocardiographic findings to revert toward normal was noted in cases in which they were initially abnormal. The negative $T_{1,2}$ pattern apparently indicates unusually severe damage to the heart, because for patients who had this abnormality in their initial electrocardiogram, the mortality rate was extremely high as compared to other patterns which are considered to be relics of previous myocardial infarction.

In the final analysis, the most potent factor in determining prognostic trends probably centers around the success or failure of establishment of adequate intercoronary anastomoses.

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CHRONIC MASTOIDITIS

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and posterior to the sigmoid sinus, and in the root of the zygoma. The dura of the middle fossa had been exposed by the disease process in two places. The middle ear and external canal medial to the stenosis were packed with cholesteatoma, which was removed. Radical mastoidectomy was done and a plastic flap was turned back from the external membranous canal. The cavity was lightly packed and the incision was closed. The postoperative course was uneventful and the patient was given penicillin, 160,000 units daily, for four days. She had no further pain. She returned for observation two months later, at which time she felt well. The ear canal was open and the mastoid cavity was almost dry.

Comment

The first patient had been recently discharged from the army. While overseas, he had had a flare-up in his ear and had been treated for otitis externa. The character of his pain and the history of discharge for many years should have enabled the attending physician to make the diagnosis. In both cases, the severe stenosis of the canals had prevented adequate drainage from what otherwise might have been benign otitis media. In both cases the infection had spread throughout extensively pneumatized mastoid processes and had uncovered the dura, forming an epidural abscess in one case. Irritation of the exposed dura is the cause of the deep-seated pain.

In both cases cholesteatoma had formed medial to the stenosis of the ear canal. This is due to the piling up of desquamated epithelium.

Summary

Two cases of extensive chronic mastoiditis with stenosis of the external auditory canal are presented in which the extensive disease process and cholesteatoma are aggravated by lack of adequate drainage. In order to prevent extension to intracranial structures or to the sigmoid sinus, surgical intervention is urgent in cases of chronic otitis media when there is obstruction of drainage due to stenosis of the external auditory canal. No other type of treatment is adequate.

POLYNEURITIS

Differentiation of Infectious Polyneuritis (Guillain-Barré Syndrome) and the Neuritis of Porphyria

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IN the study of multiple neuritis, two syndromes merit careful clinical differentiation: the so-called infectious polyneuritis or Guillain-Barré syndrome, and the polyneuritis of acute porphyria. Each has been presented at length in the literature, but a close diagnostic differentiation has not been made between them. During an acute episode of porphyria, the neuritis may not differ from polyneuritis of any cause; but similarities are even more striking between the so-called acute infectious polyneuritis and porphyria because of the obscurity of etiology in both cases, the traceable toxic factors in many cases of porphyria, the equally rapid onset of symptoms in both cases, and the similarity in length and course of the two diseases. However, the difference in prognosis is so striking that the two conditions should be differentiated early. In infectious polyneuritis, one may feel reasonably assured of recovery, whereas, in porphyria, an ultimate fatal outcome is anticipated.

Several splendid reviews of the literature have been written describing infectious polyneuritis[5,6,16,18] and porphyria,[8-12] to which the reader may refer for more complete discussion.

Infectious Polyneuritis (Guillain-Barré Syndrome)

In 1892, Osler[15] described a form of acute febrile polyneuritis with Landry's ascending type of paralysis. In 1916, Guillain-Barré and Strohl[7] likewise demonstrated cases of supposed infectious polyneuritis in which the spinal fluid contained high quantities of protein and low cellular content, known as albuminocytologic dissociation, which in combination with multiple neuritis has come to be known as the Guillain-Barré syndrome. Other terms describing the condition are encountered with confusing frequency.[16]

The cause of infectious polyneuritis has not been adequately demonstrated. Both Osler[15] and Guillain[6] believed that the condition had an infectious etiology, but Gilpin and his associates[3] were of the opinion that a virus is the causative agent. The disease is no respector of persons, and both sexes are affected equally. Although no age is exempt, the majority of cases occur in individuals between the ages of twenty and forty. There is no apparent diathesis for the disease, and the strong and otherwise healthy person may be struck down. Cases occur both epidemically and sporadically, but there is some seasonal variation, the greater incidence paralleling upper respiratory infections in changeable fall and spring weather. Familial and hereditary tendencies are not demonstrable. As a rule, psychogenic symptoms and personality disturbances are not elicited.

The Guillain-Barré syndrome is a multiple neuritis, involving in various degrees the peripheral spinal nerves and nerve roots, as well as the cranial nerves. Of the cranial nerves, the seventh nerves are the most commonly affected, resulting in unilateral or bilateral facial palsy. The motor nerves are more severely involved than the sensory.

Frequently, at the outset, the otherwise healthy individual is stricken with an acute upper respiratory infection which is accompanied by mild to moderate fever, malaise and gastrointestinal disturbances. The acute episode subsides and complete recovery is apparent.

Within a few days to a few weeks, the first signs of neuritis become apparent. Although ultimately impairment of motor nerve function is more severe than impairment of sensory function, sensory symptoms may appear long before weakness is noted. At the outset, there are paresthesias of the hands and feet, deep aching and tenderness of the large muscle groups of the extremities and body, and scattered areas of dyseshesia and paresthesia over the body and face. In some cases, there is no demonstrable objective sensory deficit throughout the course of the disease; in others, glove and stocking type of sensory loss develops in all modialities.

Days or weeks after the appearance of sensory changes, progressive flaccid paralysis sets in, beginning in the distal portion of the lower extremities or of the lower and upper extremities simultaneously, and spreading proximally in the pattern of Landry's paralysis. Weakness is usually uniformly bilateral, but impairment may show unilateral predominance. While the onset of weakness is in the fine distal muscles, the large proximal muscles of the shoulder and pelvic girdles, arms and thighs, are most severely affected. When the paralysis reaches its maximum, any remaining movement is confined to the small muscles of the hands and feet. As paralysis ascends, the large muscles of the trunk fail, and respiration is embarrassed by paralysis of the intercostal nerves so that the burden of respiration is placed upon the diaphragm. If the diaphragm fails, death may ensue. It has been noted that if paralysis is sufficiently complete to warrant the use of a respirator, death is imminent.

Development of the disease is dramatic and very incapacitating, yet the prognosis is exceedingly favorable. The mortality rate varies from 16 to 25 per cent, but good nursing care through the critical period in which the patient is helpless frequently averts death. A good prognostic maxim is that if one is able, by any means, to keep the patient alive during the critical period of maximum paralysis, complete recovery is reasonably assured.

All the cranial nerves may be involved. The seventh is the most susceptible, resulting in bilateral peripheral palsy with facial diplegia.[1] The extrinsic muscles of the eye may become noticeably affected, resulting in partial or complete fixation of the eyeball. Paralysis of the intrinsic muscles of the eye, as well, has been observed. Sensation of the face may be changed, both subjectively and objectively. Hearing is seldom affected. Involvement of the ninth, tenth, eleventh and twelfth nerves present numerous and various patterns of disturbance, resulting in deglutition, taste loss, taste distortion, increased salivary secretion and disarticulate speech.

All deep reflexes are lost, but the superficial reflexes are usually preserved. Signs of pyramidal tract involvement are lacking, muscles are flabby, and tone is destroyed. The picture is that of a lower motor neuron paralysis.

Accurate co-ordination studies are seldom obtained because of the marked motor disability. Response to galvanic and foradic stimulation is reduced or lost.

Although albuminocytologic disassociation in the cerebrospinal fluid is a common finding, the phenomenon is by no means constant. The fluid may be under increased pressure. Some of the cases described by Gilpin et al[3] showed choking of the optic disc, indicating significant increase in intracranial pressure. Systematically, there may be evidence of liver and heart damage.

Pathologic changes are not specific. The peripheral nervous system is primarily involved, resulting in demyelinization and Wallerian degeneration. Severe neuron changes in the central nervous system have been demonstrated. There may be edema of the brain and spinal cord with scattered petechial hemorrhages.

Treatment is supportative, and success hinges on skilled nursing care. Although the administration of vitamins is routine, little can actually be said in its behalf. Recovery follows with or without vitamin intake. The administration of beer and salt, although strictly empirical, seems to be a pleasant source of vitamins and minerals. Physiotherapy helps to maintain muscle tone and prepares the individual for more rapid recovery when nerve regeneration develops.

Polyneuritis with Porphyria

Porphyria is a heredofamilial constitutional disorder of pigment metabolism with protean manifestations, resulting in excretion of large quantities of uroporphyrin and coproporphyrin in the urine.

A red complex pigment termed hematoporphyrin was originally synthetized by the action of strong sulphuric acid on hemoglobin.[8,10,12,13,21] It has been demonstrated that hematoporphyrin occurs normally in small amounts in the urine.[8,11,14] In 1911, Gunther[8] described a condition in which pigments were excreted in the urine in such large quantities that the urine became a dark burgundy wine color. He attributed the condition to an anomaly of pigment metabolism and called the disease hematoporphyria. In 1924, Fischer[2] demonstrated that individuals with hematoporphyria excreted gross quantities of uroporphyrin and coproporphyrin in the urine but not hematoporphyrin, which apparently does not appear in nature but is only a laboratory product. Therefore, porphyria is considered the correct terminology for the disease in question.

The porphyrias are classified into chronic porphyria, congenital porphyria and acute porphyria. Acute porphyria takes on two forms with identical clinical manifestations, but presumably the acute toxic form is distinguished from the idiopathic form only by evidence of some toxic substance acting as the precipitating agent.[11,13,20]

Chronic porphyria is a neuropathic disease which is manifested by signs of chronic nervous system irritation. There are recurrent episodes of irritability, restlessness, insomnia and multiple vague gastro-intestinal complaints. Porphyrins may or may not be excreted in the urine. The condition is referred to as "porphyrismis." Considerable doubt exists as to whether there is such a disease entity.

Congenital and acute porphyria differ not only symptomatically but also, according to the beliefs of Gunther,[9,19] in their basic constitutional diatheses. The underlying abnormal basis of the congenital form was referred to as "porphyrosis" and that of the acute form as "porphyrism." Even though, in porphyrosis, manifestations are systemic, there is a definite but hidden neuropathic constitutional factor. In porphyrism, on the other hand, the nervous system is directly involved, giving rise to general nervousness, anxiety reaction, insomnia, irritability, depression and organic psychotic reactions (delirium).

Congenital porphyria, a Mendelian recessive disease, dominant in males, is characterized by its development in early infancy, the appearance of large quantities of porphyrins and other pigments in the urine, and photosensitive skin with purplish brown pigmentation of the skin and teeth. The pigmentation is the result of deposits of uroporphyrin I in the sublayers of the skin and teeth. Uroporphyrin I is excreted in large quantities in the urine. The predominant skin lesions are the disfiguring hydro-aestivale or vacciniforme. Photosensitivity, in the presence of exposure to intense or prolonged light, leads to restlessness, generalized pruritis, accelerated pulse and respiration, weakness, coma and possibly death. Skin necrosis may develop secondary to vascular constriction. Recurrent episodes lead to chronic hardening of the skin, resembling scleraderma.

Acute porphyria is inherited as a Mendelian dominant, appears later in life, usually during the third or fourth decade, is more frequent in females than in males in a ratio of 3:1. Photosensitivity and discoloration of the teeth are rare; largely, uroporphyrin III is excreted in the urine.

Acute porphyria has been subclassified as acute idiopathic porphyria and acute toxic porphyria. The diseases are indistinguishable. The latter differs etiologically in that there is an apparent idiosyncrasy to certain toxic agents, among which are acetanilid, nitrobenzol, barbiturates and sulfonamides. Latent forms[13,17,20,21] of porphyria have been described in which abnormal quantities of porphyrins are excreted in the urine in the absence of clinical symptoms. Conversely,[17,21] characteristic symptoms may appear in the absence of excretion of porphyrins. The porphyrin pigments may appear only during the peak of an attack, disappearing from the urine as symptoms subside, or the urine may remain free of porphyrins even during the height of an attack, but the symptoms and signs warrant the diagnosis. The condition in which porphyrins are not present was referred to by Waldenstrom[21] as "porphyria without porphyrins."

Acute porphyria is really a chronic familial disease characterized by exacerbations and remissions. Family and early personal history indicate numerous ill-defined nervous manifestations which may be considered in the category of psychoneurosis.

The disease is manifested clinically by recurrent colic-like abdominal pain, involving the lower quadrants and centering about the umbilicus with radiation to the flanks, thighs or chest. An acute episode may be preceded for months by unexplained weakness, nervousness, sleeplessness, and vague flitting pains in the abdomen and extremities.

The protracted mild illness is followed by sudden onset of severe abdominal cramps, nausea, vomiting, severe constipation, accompanied by fever and leukosytosis. The abdomen is soft, but excruciatingly tender. X-ray of the abdomen reveals dilatation of the duodenum, ileum or large bowel. There may be signs of paralytic ileus. The general physical examination is usually normal. During the attack, the urine is the color of burgundy wine and contains porphyrins. Watson and Schwartz[22] devised a simple test for porphobilinogen, a colorless chromogen substance, which when found in the urine is pathognomonic of acute porphyria. Approximately 80 per cent of individuals with porphyria, in contrast to the 20 per cent with the Guillain-Barré form of polyneuritis, ultimately terminate fatally.

Common among the neurologic signs is paresis and paralysis. Both efferent somatic and efferent sympathetic motor nervous systems are affected by the disease. Among the more frequent forms of paralysis is Landry's ascending type, which may result in death if the respiratory muscles are paralyzed. Waldenstrom[21] and Roth[17] have pointed out that irregular forms of paralysis involving scattered groups of muscles are equally common. Although subjective sensory symptoms in the form of paresthesias occur, in consideration of the severity of motor involvement the absence of sensory defect is notable. Paralysis is of the flaccid type, involving all of the extremities, and may involve all cranial nerves, leading to signs of acute bulbar palsy with dysphagia, dysphonia and asphyxia. All deep reflexes become obliterated, but the superficial abdominal and cremasteric reflexes may be preserved. In a number of cases described by Gunther,[8-10] anesthesia was widespread.

Involvement of the sympathetic nervous system as a result of changes in the abdominal autonomic ganglia is held responsible for the signs of constipation, colic and paralytic ileus.

One of the properties of porphyrins is the ability to produce spasm of smooth muscle,[14] resulting in hypertension, oliguria, neuritis (secondary to spasm of the nutrient vessels of nerves) and amaurosis (secondary to retinal angiospasm).

Psychiatric manifestations in porphyria vary widely in type and degree and may lead to admission to a psychiatric hospital. The organic reaction type is secondary either to organic cerebral damage, as a result of degeneration of the parenchyma, or perhaps to metabolic disturbances. Gross evidence of organic damage to the brain may be lacking, and in such cases, the condition may be confused with the minor psychogenic reactions such as anxiety and hysteria, the impression being based on the vague abdominal cramps, bizarre patterns of motor weakness and transient attacks of amaurosis. These, in addition to a long history of functional nervous manifestations in the patient and members of his family, and the paucity of organic signs by exclusion lead to such misinterpretations.

Pathologic studies in acute porphyria show scattered pigment (both iron-free and iron-containing) throughout various organs. Large quantities of pigment are deposited in the liver. Vascular thromboses leading to impairment of function of various organs of the body have been known to occur. The preponderance of pathologic changes found at autopsy, however, are in the nervous system. There are parenchymatous degenerative changes in the mixed peripheral nerves, with involvement primarily of motor fibers, scattered demyelinization, and degenerative changes in the cells of the sympathetic ganglia, horn cells of the spinal cord, and Purkinje cells of the cerebellum. Although the peripheral nervous system and lower segments of the cord are involved more completely than the higher segments of the cord, bulbar signs, from time to time, are predominant.

In the congenital forms, pigment is deposited throughout the body, and pathologic changes within the nervous system are minimal.

Case Reports

Case 1. An enlisted WAC, aged twenty-five, was admitted to Lawson General Hospital, June 11, 1944.

Several days following a cold, the patient noted weakness and pain in the legs and numbness of the hands and feet on May 25, 1944. At that time, examination in the infirmary was not remarkable except for a slight dragging of both feet in walking. Because of increased disability in walking, it was felt advisable on May 27 to have her admitted to the station hospital. By May 30, walking was impossible, but paralysis continued to increase so that by June 11 it was complete in both lower extremities and trunk. Slight movement, however, persisted in the upper extremities. She could roll her head from side to side, but could not raise it. The muscles of her face and extrinsic muscles of her eyes were but slightly affected. All deep reflexes were absent. Flexion of the knee, hip and back was painful. Paresthesias of the extremities persisted. Fever and other physical signs of acute infection were absent.

Admission blood count, as well as subsequent blood counts, was within normal limits. Urinalysis was repeatedly normal. Examination of the spinal fluid on June 11 showed a very slight xanthochromic fluid which contained a 169 RBC and an occasional white cell. Smear and culture were normal. Sugar was 83 mg. per cent. X-ray of the chest on June 21 showed slight atelectasis in the anterior-posterior view, but this could not be demonstrated in the lateral view. Porphyrins were not found in the urine.

A diagnosis of Guillain-Barré syndrome was made. The patient remained afebrile. She was treated symptomatically with foot board to the extremities, frequent changes of position and high vitamin diet. On two occasions, she developed dyspnea which was considered due to atelectasis, and which disappeared with frequent changes in position. By June 25, a month after onset of the disease, improvement in strength was noted. Physiotherapy, which was begun shortly after admission, was continued and by the first of August the patient was able to mobilize enough strength to move about the bed without aid, but not until September was she able to walk without assistance. Improvement in strength continued until October 4, at which time a thirty-day furlough for continued convalescence was granted. She returned from the furlough in good condition November 3, and after a further brief period of convalescence, she was pronounced fit for full duty and was discharged from the hospital.

Case 2. A lieutenant colonel of the Air Corps, aged twenty-nine, a white, married man, who had ten and one half years of continuous service, was admitted to Lawson General Hospital on November 29, 1945.

The chief complaint on admission was generalized muscular weakness, numbness of the extremities, face and ears, disturbances of taste, and double vision.

History revealed no evidence of familial or hereditary diseases, and his personal history was entirely negative with respect to his present illness. He had no unusual childhood diseases referable to the nervous system. He was a well-educated man who has apparently been adjusted physically emotionally and socially.

Military service records revealed that he was in the tropics in Africa and the China-Burma-India Theater from August, 1942, to February, 1944.

The onset of the present illness is dated to October 1, 1945, when the patient was admitted to a station hospital in Illinois because of chills and fever. On admission, he was found to have a temperature of 103.8°. No cause for the fever was demonstrated, and evidence of malaria was lacking. The episode was considered an innocuous upper respiratory infection and on October 7, 1945, he was pronounced cured and returned to duty. Upon leaving the hospital he drove to Atlanta, Georgia, and remained well until October 14, at which time he took a fishing trip with his wife and brother. They all drank white mountain corn liquor. The others noted no ill effects but on the night of October 14, the patient after going to bed feeling well, was awakened during the night with intense nausea which soon gave way to protracted vomiting, retching and hiccups. After about three hours he was admitted to a station hospital near Atlanta, Georgia, and was found to be in partial shock. Intravenous fluids were administered with resulting improvement. At that time, he complained of difficulty in swallowing, but no positive neurologic signs were noted. The patient remained in the hospital for four days and because of improvement, he was discharged to his quarters.

On October 19, he was cognizant of all food tasting like chocolate. During the latter part of the day he was overcome by a second attack of nausea, vomiting and hiccups. He felt tingling sensation on the medial aspect of the left arm. On October 22, he experienced difficulty in focusing his eyes and became aware of double vision on looking to the right and left. By then, the paresthesias had spread to involve all extremities and his gait was staggering in character. By October 26 weakness and ataxia had progressed to an alarming degree and it was felt advisable to return him to the hospital. Upon admission, the strength of the large muscles of all four extremities was found to be noticeably reduced, and the extrinsic muscles of the eyes did not function co-ordinately, although, as yet no objective sensory deficit was demonstrable. There was a profound tenderness to deep pressure anywhere on the body. All deep reflexes were reduced but the superficial reflexes remained active. A positive Lasegue sign was found bilaterally.

Laboratory studies on readmission were essentially normal. Glucose tolerance varied from 108 to 133 milligrams per cent, sugar being found in the urine. On October 29, a spinal fluid examination showed a clear fluid with 3 lymphocytes, negative globulin, negative Wassermann, a gold curve of 0011000000, and a total protein of 60 mg. per cent.

Because of rapidly developing paralysis, the patient was transferred to Lawson General Hospital on October 29, 1945. Upon admission, examination revealed severe impairment of the cranial nerves, loss of taste, paralysis of the extrinsic muscles of the eyes with immobilization of the eyeballs, complete bilateral ptosis, and nearly complete paralysis of the facial muscles. Generalized weakness was also progressing. He described paresthesis from the toes to the face. Deep muscle tenderness and pain upon movement were increasing. The deep and superficial reflexes by then were absent. Complete glove and stocking anesthesia extending to the mid-thigh and mid-arm regions had appeared. Within twenty-four hours, the condition had progressed to such extent that only the toes of the right foot and the fingers of the right hand could be wiggled slightly. Trouble in swallowing was encountered and respiration was difficult. Because of the graveness of the patient's condition all precautions were taken. He remained in this condition until the last week in December, at which time some improvement in strength was noted. From that point on, improvement was progressive and in four months, 80 per cent of the lost strength was recoverd, and the only sensory disturbance was a mild hyperesthesia of the soles of the feet. This was considered a Guillain-Barré syndrome, and laboratory studies supported the diagnosis.

Urine porphyrins were negative. Throat cultures were negative. The spinal fluid on October 29 revealed a total protein of 60 mg. per cent, and on November 6 the total protein was 256 mg. per cent. On February 7, 1946, the total blood protein was 5.3; serum albumin, 3.7; serum globulin, 1.6; nonprotein nitrogen, 34; and urea nitrogen, 17. Cerebral spinal fluid examination on February 22, 1946, showed 160 mg. of total protein and a zone curve of 2211000000.

Case 3. A twenty-seven-year-old white WAC private of English descent, was admitted to Lawson General Hospital on April 5, 1945, complaining of paralysis of all four extremities and weakness of phonation and deglutition. At the age of five she had a tonsillectomy; at seventeen, an appendectomy; at twenty-five, because of irregular menses, a dilation and curretage was done, following which the menstrual cycle was normal. Her mother died at twenty-eight years of age of paralysis, the exact nature of which is unknown. The patient was ten years old at the time. She had a sister one year younger who had been observed in state institutions on a number of occasions because of emotional instability. There were two younger brothers, apparently healthy. The patient occasionally had tantrums which were described by her father as reminiscent of similar attacks evidenced by her mother before her death. The patient completed grammar school but interrupted high school to obtain employment as a drill press operator. After working a while with a good record, she quit to enter the army.

She enlisted in August, 1944. On January 15, 1945, she developed recurrent cramping abdominal pain associated with the passage of about five loose normal-colored stools a day. She continued to perform her clerical duties and on February 6 went home on furlough. The abdominal colic continued and at times was severe enough to cause her to double up. She vomited occasionally but sought no medical aid until her return to the army air base to which she was assigned. On February 24, 1945, she reported to the dispensary and was immediately hospitalized. Physical examination, including rectal, pelvic and neurological studies were normal, except for generalized abdominal tenderness, most pronounced in both lower quadrants. She appeared anxious and emotionally unstable. She vomited occasionally but had no diarrhea nor fever.

Laboratory studies were normal except for the urine which appeared smoky, was positive for acetone, but otherwise was negative. X-rays of the chest and gastrointestinal tract were normal, except for some pylorospasm, which was not present on subsequent examinations.

She was given intravenous fluids, barbiturates and antispasmodic drugs, in order to relieve symptoms which were at first thought to be psychiatric in origin.

On March 10, the fourteenth hospital day, she stated that she was unable to control her arms and legs, which had become weak. Movement was choreiform in nature, and the extremities trembled when motion was attempted. The loss of strength was of a bizarre nature in that she could not rise from a chair, but if assisted to a standing position, she could walk the length of the ward. The diagnosis of hysteria was seriously entertained. On March 14, she developed bilateral flank pain, blood pressure of 160/120, and the urine revealed 2 plus albuminuria, 3 to 4 white blood cells per high-powered field, and a specific gravity of 1.023. Repeated tests resulted in similar findings. The blood nonprotein nitrogen and urea were normal. A spinal puncture was performed on March 29 with normal findings throughout. During the next few days her symptoms improved. She vomited less and complained of less abdominal pain. The blood pressure fell to 132/100, but there were no changes in the urine findings. Neurological examination showed loss of all deep reflexes except the knee jerks which could be elicited if re-enforced. Her temperature occasionally rose to 100° F. in the afternoon. Considerable wasting of the extremities and apparent weight loss were noted, although the weight was not recorded.

On April 4, she was seen to pass dark colored urine which contained neither blood nor bile. Ehrlich's test for porphorobilinogen was positive. The diagnosis of acute porphyria was made, and the patient was transferred to Lawson General Hospital.

Previous clinical and laboratory findings were confirmed. The systolic blood pressure remained at 130 to 140 mm. and diastolic at 108 to 110. She lost the ability to phonate and could not talk above a whisper. Neurological examination revealed widespread flaccid paralysis of the lower motor neuron type. The muscles of the palate moved normally. The vocal cords were completely paralyzed. An electrocardiogram was normal. Examination of the urine was positive for porphorobilinogen. Coproporphyrin was observed spectroscopically in the urine on mutiple occasions. Uroporphyrin was not found. The color of the urine varied from normal to dark wine color. Total plasma protein, albumin-globulin ratio, and the blood count were normal.

She had recurrent bouts of bilateral flank pain, anorexia, and abdominal cramps, which were usually accompanied by the excretion of dark urine. Her cough was weak. She suffered several disturbing episodes of cough and dyspnea, associated with the aspiration of mucus, which were relieved only by a motor-driven suction apparatus. She required constant vigil by special nurses because she could not call out, nor could she control her arms enough to ring a bedside bell. During the early part of her hospitalization she took food and fluid poorly because of dysphagia. Her diet was augmented by intravenos fluids and parenteral vitamin concentrates. She was fitted with braces for the extremities and a special wheel chair was devised. Amenorrhea has been present since January. During June and July, muscle strength gradually, although incompletely, returned. The muscles of the trunk, shoulders, and pelvic girdle became stronger, but there was little improvement in the small muscles of the hands. The voice returned to a hoarse whisper; appetite, vigor, and spirits became much better. The patient was transferred to a veterans' facility near her home.

A diagnosis of acute porphyria was made and substantiated.

Case 4. A private in the Army Air Forces ground crew, aged eighteen, white, with three months of service, was admitted to Lawson General Hospital, December 19, 1945. His chief complaints were "spells," weakness, and "passing out." The patient's history revealed that he had had pain in his back and flanks since early childhood. A doctor had stated that he had "kidney trouble" of some type. He suffered pneumonia at the age of eleven years and had had enuresis since early childhood. The patient, however, stated that he never recalled passing any dark colored urine. However, he was not a good witness and his statements were vague. From the age of twelve, he suffered recurrent abdominal cramps of sufficient intensity to immobilize him in a flexed position. At the age of fifteen, he began to have vague fainting spells beginning with hot and cold sensations followed by dizziness and unconsciousness. They had not been accompanied by convulsions, biting of the tongue, nor loss of control of the bladder. These attacks had occurred from two or three times weekly to every three or four months. The patient quit school in the ninth grade to work as a constructor and mechanic. He did this to help support his family, but he also stated that school was difficult for him and he did not enjoy it. For many years he had been shaky, shy and introverted. He did not enjoy mixing with people and was afraid of the opposite sex. The patient stated that throughout his life he had had peculiar experiences, had thought he heard footsteps behind him but, upon looking around, no one was there. Also, on occasions he had heard his name called when no one was near. The family history was contributory, in that the father had suffered from stomach trouble for many years, had been wounded in the last war and had been hospitalized frequently. The mother suffered from asthma and had had numerous "nervous breakdowns." But as far as could be determined, there was no family history of epilepsy or mental disease. Two brothers and one sister were in good health.

The military history was short. He stated that he came into the army in September, 1945, but he did not recall the date. He began basic training but said he "couldn't take it" because of headaches and swollen throat. He had always had physical complaint, but the strenuous activity of basic training accentuated his symptoms. Before and after coming into the army, he suffered from episodes of crying, and since being in the army he had had three occasions when he would break down crying, which led to a fainting spell.

The present illness began while en route from Camp Chaffee, Arkansas, to Keesler Field, Mississippi, when he developed headache, malaise, chills, fever and sore throat. He was admitted to the station hospital, where he was treated for severe pharngitis with sulfa drugs and penicillin. Improvement was rapid and he was discharged in several days from the hospital. Repeated throat cultures were negative. He was readmitted on November 18, 1945, because of persistence of the same symptoms and an additional complaint of unsteadiness on his feet. On this admission, he was found to be ataxic and to walk with a wide gait. There was moderate in-co-ordination of the upper extremities. Further neurologic examination revealed Rhombergism, astereognosis, and abscence of the deep reflexes. The patient complained of a burning sensation in the feet which made walking uncomfortable. Deep sensibility, especially vibration, was impaired but superficial sensation was spared. All findings were more pronounced on the left. There was hesitation and blocking of speech.

The general physical examination was normal. An electrocardiogram showed evidence of left axis deviation. Laboratory studies at Keesler Field revealed normal blood and urine, and the spinal fluid pressure was normal. Globulin was negative and total protein was 59 mg. per cent. Only two white blood cells, lymphocytes, were found.

The patient was then transferred to Lawson General Hospital on December 19, 1945. Upon admission, he continued to show ataxia and in-co-ordination, progressive weakness of the legs, and complete loss of deep sensibility. On January 14, the spinal fluid showed 128 mg. per cent total protein, with a gold curve of 3322-100000; globulin was negative and there were 3 lymphocytes. All other laboratory studies were within normal limits.

As the case progressed, further studies were obtained, and an alert ward man stated that he was afraid that the soldier was suffering from a kidney disease because his urine was very dark red. This led to further investigation, and the urine was found to be positive for hematoporphyrins. Uroporphyrin and coproporphyrin were negative. Gastrointestinal examination was negative. Throat and stool culture were negative.

Upon admission to the hospital, the patient was mentally somewhat confused. He complained of hearing voices. He showed tremor of the face and hands, had feelings of insecurity, and manifested evidence of fear. Because of some of his reactions, it was thought that he might be suffering from an acute schizophrenic reaction, and confinement on a closed ward was felt to be advisable. After about a week, the period of confusion and incoherence gradually subsided, and he was released to the open ward. His mental reaction was apparently acute, and presented a crescendo and diminuendo pattern. The dark urine was discovered at the height of the psychotic episode and at no other time. Porphyrins in the urine have subsequently remained negative.

Comment

Two cases of infectious polyneuritis and two cases of neuritis secondary to porphyria have been presented. With respect to the neuritis, the two forms are essentially identical, but there are otherwise certain fundamental and distinct differences

Infectious polyneuritis, on the one hand, probably results from a virus infection. It follows, after some delay, acute upper respiratory infection. It occurs in an otherwise healthy individual and may be sporadic or epidemic. The neurologic signs are referable to both the sensory and motor peripheral nervous systems. There are few general systemic manifestations. Hereditary and familial factors are absent. The disease is self-limiting and prognosis is good. Complete recovery may be expected in 75 or 80 per cent of cases. Albuminocytologic disassociation in the spinal fluid is common but is not always present and porphyrins in the urine are invariably absent.

Porphyria, on the other hand, is a familial hereditary disease, resulting in the production and secretion of abnormal porphyrins. There is a long-standing family and personal history referable to the gastrointestinal and nervous systems. There are ill-defined and unexplained episodes of nervousness, irritability, insomnia, transitory blindness, abdominal cramps, and constipation. The neurologic signs are referable almost exclusively to the peripheral motor nervous system; however, some cases may show sensory deficits. Mental symptoms, such as organic delirium, depressions, disturbances of mental content, may be prominent during an acute episode. In the spinal fluid, the albuminocytologic disassociation is seldom noted, but occasionally does appear. Prognosis is grave, and 80 per cent of those affected are expected to terminate fatally.

Other conditions to be differentiated from both diseases are hysteria, poliomyelitis, multiple sclerosis, progressive atrophy, periodic family paralysis, diphtheritic polyneuritis, tic paralysis, serum paralysis and parotitic paralysis.

In discussing the four cases which have been presented, we have the first two which showed fairly clearly the Guillain-Barré syndrome with the classical albuminocytologic disassociation. The third case was unequivocally an acute porphyria with positive clinical and laboratory proof.

In the fourth case, the diagnosis of porphyria was made for the following reasons: The family and previous personal histories were filled with psychogenic manifestations of the type described by Roth.[14] From the history of recurrent colic, the sudden onset of unexplained neuritis and psychosis, and the fact that at the height of symptoms the urine was wine-colored and contained abnormal quantities of hematoporphyrins, it is felt that a diagnosis of porphyria, though not absolutely proved, was undoubtedly justified because of strong presumptive evidence.

Summary

In conjunction with a brief review of the literature, two cases of infectious polyneuritis and two cases of porphyria were presented. They have been differentiated clinically. A diagnosis was made in the fourth case on the basis of clinical manifestations, in spite of the fact that absolute laboratory evidence was lacking.

It is felt that in instances of multiple neuritis, porphyria should be kept in mind and carefully differentiated from other forms of neuritis, especially the Guillain-Barré type, because of the ultimate serious prognosis in porphyria. A diagnosis of porphyria in the absence of excreted porphyrins may be made with reasonable accuracy from clinical signs and symptoms.

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THE PRESENT SOUTHERN MINNESOTA MEDICAL ASSOCIATION

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grams too elaborate to serve the purpose for which the organization had been formed. It was also apparent that, to some extent, it was duplicating the functions of other organizations, such as the state medical association and the tri-state association. The trend of thought among the members was in favor of smaller and more simple meetings, such as those of more recent years, since such meetings permit closer association of the members and more individual participation in discussion.

The primary object of the organization has been improvement of the practice of medicine through dissemination of medical knowledge. In this, it has been eminently successful. Of equal importance, although perhaps intangible, has been the inspiration members have derived from acquaintance with others whose problems and aspirations are identical with their own. I think that all old members will agree that the association has been invaluable in furthering this acquaintance and fellowship.

INDUSTRIAL INTEGRATION

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THOSE of us engaged in a part-time or full-time industrial program, during the war, and because of it, were placed in unusual and strained positions. As a result we were forced to "streamline" many of our routine industrial procedures. It was expedient and extremely workable to place much of the preplacement physical examination in the hands of a competent nursing staff. This, when properly supervised, resulted in a program that was satisfactory, particularly in view of the demands made by industry for an ever-increasing rate of employment. Inasmuch as the rate of "hired-to-terminated" is still high, our "streamlined" program is still much in vogue.

The completeness of a physical examination need not be judged by the amount of time a medical examiner spends with the applicant for a job. It makes little difference who asks the questions, be it doctor, nurse, social worker, or clerk, provided the information gleaned is negative. In cases where the information is of a positive nature, it then becomes the duty of trained personnel to determine the cause and ultimate effect on industry, if said individual becomes placed in industry. Suppose, for example, the applicant states in his application blank that he is short of breath. It then becomes the duty of the interrogator or the medical examiner to determine whether this is due to some peculiarity of anatomy, i.e., hunchback with a marked scoliosis; congenital or acquired cardiac pathology, e.g., rheumatic heart in a young individual, or heart muscle failure due to arteriosclerosis in an older individual; metabolic, such as one might find in a condition of overweight or hyperthyroidism; infectious, such as tuberculosis of the lungs; or, nutritional or emotional fatigue due to faulty dietary habits, shock, or overwork.

What we, as medical examiners, must attempt to do are the basic, indispensable procedures. These programs should not be intended to reject the handicapped or submarginal worker; rather, to suit the worker to his most productive job in industry and to minimize the defects that the worker will attribute to industry when this tremendous program once begins to be dismantled. It then becomes the duty of the industrial physician and surgeon to learn to safeguard the worker in industry from machine and material hazards; to supervise environmental working conditions; to conserve health and preserve workability of the employe while at work; to restore speedily and properly the injured worker to his former earning capacity; and to be a sympathetic yet unbiased appraiser of the amount of an industrial disability, being neither for the employer nor against the employe. In this position, the surgeon becomes a sort of liaison officer between the worker and his job, and thereby attempts to atttain 100 per cent efficiency with a minimum amount of risk and time lost.

It is particularly advisable at this time when the relationship between the so-called "plant doctor" and the injured employe is more than ever likely to be strained, to redouble the effort to bring the worker, management and the doctor closer together. In order better to accomplish this, it is the duty of the medical department to strive to foster that feeling of confidence between the staff and the worker to such a degree that there will be no doubt in the mind of the worker that nothing is left undone to speed the progress of his return to his former earning capacity. As a further aid in this direction, it is the duty of the industrial organization to provide a competent and well-trained medical and nursing staff, one that becomes known for its ability to carry out with dispatch the duties for which it has been created. To this end, also, there must be sponsored a much closer co-ordination between the industrial and the private physician. It is fully realized that a system in industry can never be devised to supplant the duty of the private physician. No matter how much industry attempts to give the worker, it will be accused of cutting corners or being incomplete. Before this can anywhere near be accomplished, the worker must divorce from his mind the idea of the "plant doctor" as a disinterested physician. The worker must be made to feel that the physician has his interests at heart—that it is the worker who is the backbone of the organization.

Preplacement examinations are made to facilitate orientation and advancement of the worker in accordance with his own physical and mental status; to acquaint him with his own physical shortcomings; to guide him in improving and maintaining good health; to safeguard the health and safety of his associates; to discover and to control unhealthful exposure; and to assist in directing the below-par or sick individual into the hands of conscientious medical assistance. As such, the examination must be accurate in appraisal, unprejudiced in evaluation, and personal in principle. The question naturally arises as to the ability of the average worker to select a physician either to examine him preparatory to work or to treat his industrial ills. True, the worker has unlimited confidence in the physician of his own choosing, and if he can only be made to appreciate the effort behind the so-called "plant doctor," his familiarity with the operation of the plant and materials involved, and the frequency with which he sees the same or similar situations repeated, he then, and then only, can begin to appreciate that perhaps the "plant doctor" is, by virtue of all this, somewhat better equipped to treat and handle industrial ills. Further, the industrial physical examination is not intended to be compared with the examination given in private practice. Each has its purpose. The worker must also understand that in industry he has the right of appeal to his own physician. This should be encouraged rather than denied.

When one considers that maladjustment in industry ranks along with accidents and discordant interpersonal relationships in creating absenteeism, inefficient work, and low morale, it is easier to understand why management might do well to insist on proper placement in industry. This fact takes on added importance when one further considers that the average man loses 0.6 day per annum from occupational causes as against 8.8 days per annum from non-occupational causes. Multiplying this figure by upward of fifty million people employed, one readily arrives at the staggering figure of lost production and lost time. In 1942 nearly four billion dollars were spent because of illness and disability. This figure was slightly less than 4 per cent of the total national income.

In setting up a physical examination program with all of its restriction, industry is confronted with four possible situations.

1. There are a sufficiently large number of employes seeking employment so that industry may be selective, selecting from only the comparatively small percentage of physically perfect applicants.

2. Industry needs manpower to the point of hiring some one for the job, with little regard for defects.

3. Industry may try to be ultra-efficient and set up a physical replacement examination that loses itself in a multiplicity of wasted effort and motions.

4. Industry may try to be practical, yet effective, in uncovering defects of body and mind so that neither the employe nor the employer is penalized.

Obviously, Group 1 is neither feasible nor practical, nor is it a sign of effective preplacement interviewing. Yet unless the industrial commissions and industry get together it is that group to which industry will turn in an attempt to protect itself. In so doing, society will bear the burden of unemployment and employment costs, and this again in turn will be reflected in terms of higher merchandise prices paid by the consumer.

Likewise, Group 2 is far from the answer; and yet there are individuals in this group who can be suited to industry.

Group 3 takes on the duties of "Mr. Citizen's private physician, and as such should not come under the scope of industrial or preventive medicine.

Group 4 then becomes the logical alternative. Even here, one must learn to discriminate between the prospective employe (the applicant) and the one already employed. It is the industrial physician's job to do those things listed elsewhere in this paper. Proper preplacement interviewing by trained workers therefore bridges one of the large gaps in the industrial medical program.

Mantoux testing is valueless unless correlated with an x-ray examination (approximately 60 per cent of the adult population is Mantoux positive). Wassermann testing is of value in bringing to the fore the case of syphilis that is unknown to the individual. It protects neither the individual tested nor the employer and unless repeated may lull the patient into a false sense of security.

In the light of the above there are certain functions that are *musts* from the physician's standpoint. He must evaluate:

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CLINICAL-PATHOLOGICAL CONFERENCE

EPITHELIAL NEOPLASMS OF THE APPENDIX

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Dr. A. H. Wells: We wish to present briefly four cases of epithelial neoplasms of the appendix and discuss the associated terms of carcinoid, mucoid carcinôma, adenocarcinoma, adenoma, pseudomyxoma peritonei, and mucocele of the appendix.

Case Reports—Clinical Aspects

Dr. S. W. Arhelger: (Case 37141) This eighty-three-year-old retired housewife had been suffering with pain about the umbilicus of two days' duration. The pain moved to the hypogastrium and later became constantly severe and localized in the right lower quadrant. She had vomited greenish material once and had noticed mild constipation. Her past history included hospitalization ten years ago for longstanding severe hypertensive cardiovascular renal disease and toxic nodular goiter. Her blood pressure at that time was 224/122. At the time of the last admission it was 180/100; pulse, 120; respirations, 14; and temperature, 100.4° F. There was severe tenderness and rebound tenderness with moderate muscular spasm in the right lower quadrant. She also had percussible enlargement of the heart to the left and a systolic mumur, which was maximum at the apex and transmitted to the left axilla, but no pulmonary râles. The white blood cell count was 12,700 with 74 per cent neutrophiles. Her blood urea and creatinine and urinalysis were essentially normal. An emergency appendectomy was followed by an uneventful convalescence. No further operation was considered advisable.

Dr. L. L. Merriam: (Case 3038) This sixty-eight-year-old housewife claimed some abdominal discomfort since childhood. She had been admitted to the hospital one year before her death with blood in her stools, at which time small ulcers in the rectum were described as the source of the blood. Eight weeks before her last admission and three months before her death, she had an attack of abdominal cramps and diarrhea. She noticed loss of weight, poor appetite, abdominal "bloating," and belching. On admission, 4,750 c.c. of ascitic fluid was removed from her distended abdomen. Carcinoma cells were found in this fluid. She became gradually weaker during her last two months.

Dr. W. N. Graves: (Case 26912) This thirty-seven-year-old forester suffered from pain in the right side of the abdomen for twenty-four hours. It began at the time of a long auto ride over a rough road. The pain was aggravated by walking, and his abdomen became sore. Physical examination revealed muscular spasm and tenderness in the right lower quadrant of the abdomen, and tenderness to the right on rectal examination. He had a white blood cell count of 15,000 with 70 per cent neutrophiles and a temperature of 98.4° F. An appendectomy was followed by a rapid return to normal activity.

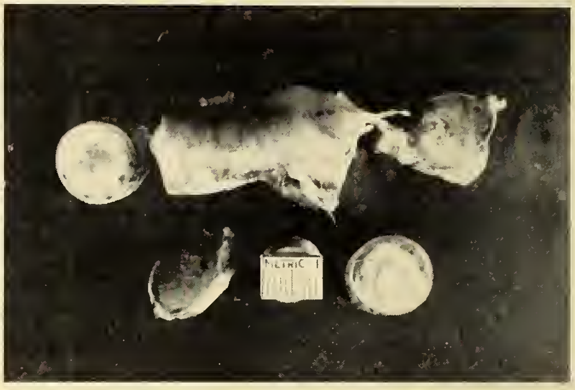

Fig. 1. Serosal and cut surfaces of an appendix with mucoid carcinoma.

Dr. A. N. Collins: (Case 37213) This twenty-one-year-old steelworker had a steady dull pain in the lower right quadrant of the abdomen for forty-eight hours. Physical examination revealed mild tenderness in the same area of the abdomen, and his white blood cell count was 13,850. An emergency appendectomy was followed by a rapid convalescence.

Pathological Aspects

Dr. A. H. Wells: (Case 37141) This appendix (Fig. 1) measured 7 cm. long and from 1 to 1.5 cm. in diameter. There was a perforation, 4 mm. in diameter, at the distal end at a localized site of suppuration. The remainder of the lumen was filled with mucus-forming anaplastic epithelial cells (Fig. 2) which invaded the muscularis. At the proximal end the mucosal glands had a papillary adenomatous alteration without invasive properties.

(Case 3038) There was a rather highly anaplastic adenocarcinomatous infiltration (Fig. 3) of the walls of a swollen (1 cm. in diameter, 6 cm. in length) appendix, with an obliterated lumen and an irregular distribution of muscle fibers suggestive of a congenital

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From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota, Arthur H. Wells, M.D., Pathologist. Clerical Assistance by Miss Faith Gugler.

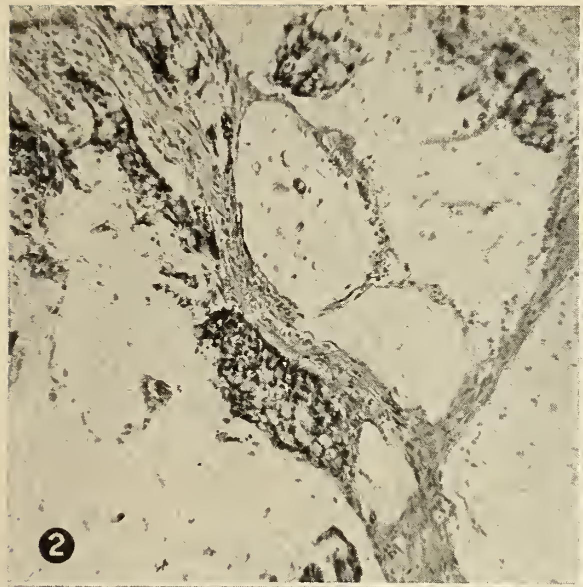

Fig. 2. Typical mucoid carcinoma of the appendix.

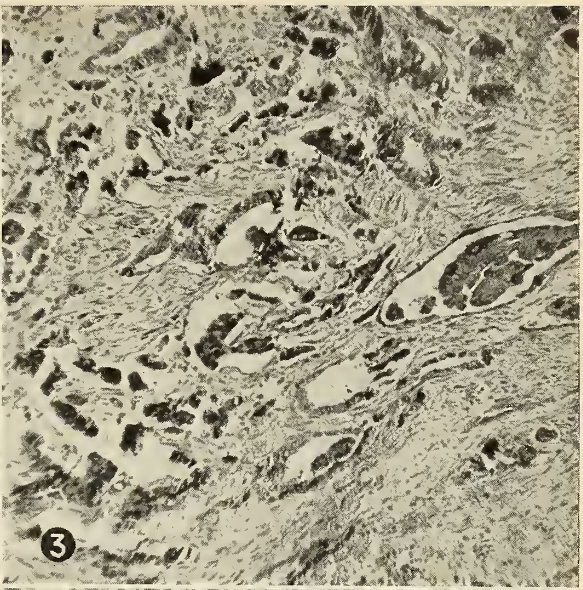

Fig. 3. Highly anaplastic adenocarcinoma of the appendix.

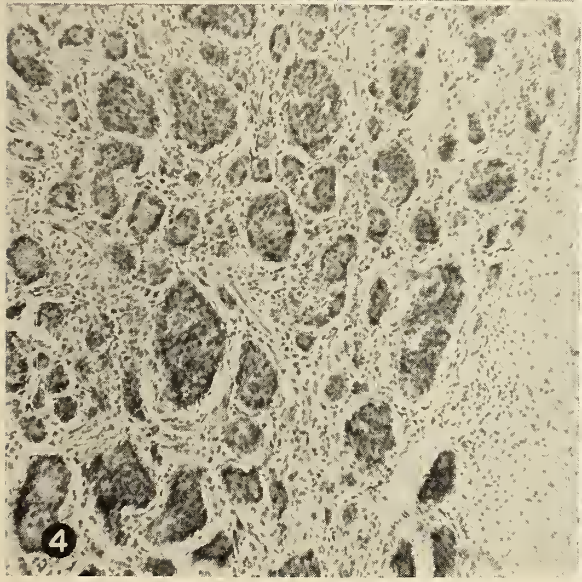

Fig. 4. Typical carcinoid of the appendix.

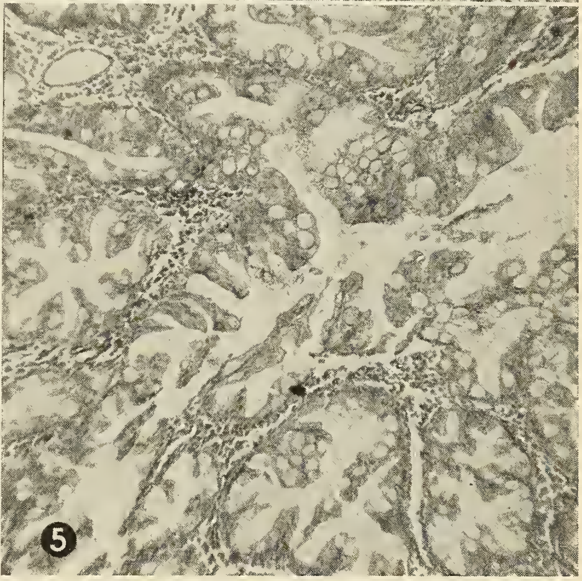

Fig. 5. Papillary adenoma of the appendix.

anomaly of the appendix. The malignancy had extended to regional retroperitoneal lymph nodes and both peritoneal and pleural surfaces. Terminally, she developed intestinal obstruction due to malignant adhesions about loops of small intestines.

(Case 26912) This man's appendix had small clumps of highly hyperchromatic, uniformly small, epithelial cells (Fig. 4) with both simple glandular arrangements and small clumps with palisaded peripheral cells. These carcinoid cells were located primarily in the obliterated lumen of the distal 1 cm. of the appendix, and a few cells had extended into the muscularis. In addition, the proximal appendix had a very mild neutrophilic infiltration of all layers.

(Case 37213) This appendix, 7 cm. in length and 0.7 cm. in diameter, had no unusual gross appearance. However, histologic sections from near the middle revealed a small area of mucosa with a slightly papillary adenomatous proliferation of the mucosal glands, of neoplastic proportions without malignant invasion (Fig. 5). There was no inflammatory change.

In conclusion, these four cases are illustrative of different forms of epithelial neoplasms of the appendix: mucoid carcinoma, adenocarcinoma, carcinoid, and adenoma.

Carcinoid

Although there is no general agreement as to classification of epithelial malignancies of the appendix, it is obvious that carcinoids (enterochromaffin, basi-granular, Nicolas, Kultschitzky, Schmidt and Ciaccio cell tumors) should be set in a class by themselves. They have been described as often as one in every 200 appendectomies[4] and have been studied in great detail, so that the practical aspects of their nature are well known. Carcinoids are found 50 per cent of the time in the appendix, and the remainder in the ileum, jejunum, stomach, gallbladder, duodenum, Meckel's diverticulum, cecum, colon, and rectum. They most likely develop from the Kultschitzky cells found sparsely scattered in the bases of Lieberkuhn's crypts along the intestinal tract. The physiologic function of these cells is not settled. It is significant that approximately 25 per cent of the recorded[1,2,11] carcinoids of the small intestines metastasize, and some are the cause of death due to their malignant nature. Nearly all of those found in the stomach and colon tend to metastasize. The same tumor in the appendix is much less likely to extend beyond this organ. Less than twenty had been reported as metastatic by 1942.[5,10] Even when it does reach a regional lymph node, it is very likely to remain there for many years without harm to the patient.[8] Consequently, for all practical puropses, the surgeon can consider carcinoids of the appendix as essentially benign. However, if recognized at the time of the operation, local extensions should be sought for and removed.[5] One should avoid postoperative x-ray therapy and mental disturbances of the patient concerning "cancer."

Adenocarcinoma

Other types of carcinoma of the appendix represent only about 10 per cent of the total malignancies of this organ and are much more serious than the relatively common carcinoids. They are more likely to occur in the fifth and sixth decades rather than in the third, as is the case in carcinoids of the appendix.[6] Unquestionable examples of this smaller group, which is sometimes called adenocarcinoma, are rare and should be reported in the medical literature for future group study, reference, and clarification of the subject. Uihlein and McDonald[14] divide their seventeen cases (from thirty-one years of appendectomies at the Mayo Clinic) into "cystic" and "colonic" types. Although the Lieberkuhn's glands of the appendix undoubtedly have the same potentialities for varieties of epithelial malignancies as the same glands in the colon and rectum, there appears to be a decidedly increased tendency toward mucoid carcinoma in the appendix. These malignant cells form mucin and pseudomucin (chemical and tinctorial variants of mucus).[10] The extension of this malignancy to peritoneal surfaces may lead to pseudomyxoma peritonei or "jelly belly." The abdominal cavity may become filled with gelantinous material.

Benign Epithelial Lesions

Simple mucoceles of the appendix most often result from an inflammatory process obliterating the proximal lumen. Subsequent secretion of mucus by lining epithelial cells in the distal lumen may in time rupture the atrophic appendix walls and produce pseudomyxoma peritonei.[13] The condition can kill as the result of intestinal obstruction.[9] Whether or not this non-neoplastic lesion (mucocele) becomes malignant, as has been theorized,[15,16] needs further confirmation. Furthermore, it may be very difficult to rule out mucoid carcinoma in an apparent case of ruptured mucocele. Pseudomyxoma peritonei is most often due to mucin secreting, benign or malignant ovarian cysts.

It is thought that some of the adenocarcinomas have their origin in benign papillary adenomas of the appendix.[14] There is much proof of this relationship in the colon. Furthermore, the tendency toward multiple papillary areas in the colon makes it imperative that x-ray studies of the colon be performed in patients with adenomas in their appendix, such as in our Case 37213. Benign papillary adenomas may form mucus and distend the appendiceal lumen with this product to the point of rupture. Their differentiation from a low-grade mucoid carcinoma may be extremely difficult, if not impossible.

Clinical Manifestations

"It is futile to attempt to make a preoperative diagnosis" of appendiceal tumors.[12] The odds favoring common lesions with the same manifestations are too great. In a review of ninety-six cases[7] of carcinoma of the appendix, 83 per cent of the patients suffered from symptoms of appendicitis and 28 per cent had symptoms for one year or more. In another report of twenty-eight patients[10] with appendiceal cancer, the chief complaint was pain in the right lower quadrant of the abdomen. The associated appendicitis so frequently found will of course produce all of the signs and symptoms of this disease. Rarely a tumor mass or blood in the stool may be evident.[14] A chronic recurring ill-defined pain in the appendiceal region is a frequently mentioned symptom of carcinoid. In many cases, this lesion is entirely clinically quiescent and is described as an incidental finding in laparotomies performed for other lesions.

Summary

1. We have presented four case studies of patients with different epithelial neoplasms of the appendix, including mucoid carcinoma, adenocarcinoma, carcinoid, and papillary adenoma.
2. A very brief review of the nature and interrelationships of these neoplasms, and of mucocele and pseudomyxoma peritonei, is given.

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(Continued on Page 223)

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
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(Continued from January issue)

A. O. Heiberg, who was born at Christiania (Oslo), Norway, in November, 1855, received his primary education at Quam's Latin School in that city and his more advanced schooling at the Latin School at Trondjem. He was preparing to enter the Fredericiana University to study medicine, but changed his plan and instead took a course of two years at the Stenkjaer Apothecary under Mr. A. J. Hoegh.

In April, 1873, Mr. Heiberg came to America and to southern Minnesota, which was to be his permanent home. In his first year he worked for a druggist, Mr. Pilzer, in Winona, and then settled in Rushford, Fillmore County, where he was associated as a pharmacist in different drugstores, first with K. Olson for four years, subsequently with Elling P. Kierland, a pioneer medical practitioner, and finally with A. E. Hazard, with whom he bought the Corner Drug Store, which the two men operated until the partnership was dissolved by mutual consent in 1902.

On August 30, 1887, in Rushford, Mr. Heiberg was married to Bertha Anderson; five children were born to this marriage.

In 1889, returning to his original intention of becoming a practicing physician, A. O. Heiberg entered Rush Medical College, in Chicago, where he spent two years before going on to the Jefferson Medical College, in Philadelphia; from which he was graduated in 1893. Again in Rushford, the possessor of state medical license No. 346, under the act of 1887, he entered on ten years which brought him deservedly a large and successful medical practice, in which his scientific skill, together with his cheerful manner and sympathetic understanding, won him confidence and esteem. Among his professional affiliations were memberships in the Winona County Medical Society and the Southern Minnesota Medical Association.

When, in 1903, symptoms of bulbar palsy appeared, and skilled physicians in the East told Dr. Heiberg that the months of his life were numbered, he decided to move his family to Northfield, Minnesota, where the children could obtain excellent educational advantages, and he made the change during the early summer. He died in Northfield on March 18, 1904, survived by Mrs. Heiberg and the five children.

About **Ole T. Hoftoe,** little information has come to light except that he was born in New London, Kandiyohi County, Minnesota, in 1854, was graduated from Rush Medical College on February 17, 1885, and within a month, on March 13, received state certificate No. 1012 (R) to practice medicine in Minnesota. For a year or so, in 1885 and 1886, he was resident in the village of Fountain, Fillmore County, and in the next year in the larger, near-by town of Lanesboro. In the following year it appears that he had moved to Dakota Territory (North Dakota) where, on March 30, 1888, Dr. O. T. Hofte [sic] was registered as being in practice in Abercrombie, Richland County, and there, according to a gazetteer and business directory, he remained well into the nineties. After an undetermined period of time, but certainly prior to 1907, Dr. Hoftoe returned to his native place of New London. After 1909 his name did not appear in the official medical directory.

Robert Hoyt, who became one of the earliest of physicians in Fillmore County, was born at Hesper, Iowa. It is said that soon after his graduation in medicine, probably in 1859 or 1860, he settled in the village of Lenora, and there for two years was a confrere of Dr. James M. Wheat, who had come in 1856. From Lenora he moved to Beloit, Wisconsin, the home of his wife's parents, where he followed his profession for many years. In an early history of Fillmore County he was mentioned, it is believed erroneously, as a charter member of the Fillmore County Medical Society, which was founded in 1866.

Robert W. Hoyt, almost certainly a relative of Dr. Robert Hoyt, the pioneer physician already mentioned, was born at New Haven, Addison County, Vermont, on February 14, 1852. When he was eight years old he moved with his parents to Fillmore County, Minnesota, where he spent his boyhood and attended the local schools. In 1875 he was graduated from Rush Medical College of Chicago and immediately afterward began to practice medicine in the community of Lenora. It is said that in the next year he moved to Walnut Grove, Redwood County, where he remained for a considerable number of years, into the eighties. In June, 1880, he was married to Myra E. Tester, of New Lisbon, Wisconsin. By 1890, Like Dr. Robert Hoyt before him, Dr. Robert W. Hoyt had moved to Wisconsin, the home of his wife's people, and was established in medical practice in New Lisbon, where he still was in 1912; his name did not thereafter appear in the medical directories.

Dr. Huffman, apparently a medical nomad, was in Preston early in 1863, exhibiting, according to the *Preston Republican,* "much skill in the way of restoring loss of sight and hearing. Those afflicted with diseases of the eye and ear would do well to call at the Minnesota House and consult him." Another clue to this practitioner lies in the statement that Dr. Huffman, an eye and ear specialist from St. Louis, practiced in Austin, Mower County, for a few months in 1863.

Thomas W. Hunt, a graduate of the Jefferson Medical College in 1894, was licensed in Minnesota on July 10, 1894, receiving certificate No. 456, under the "Act to Regulate the Practice of Medicine in the State of Minnesota" as approved in 1887. He was then a resident of Douglas County. Not long afterward he presented his license in Fillmore County, and in the issue of 1896-1897 of a state gazetteer and business directory he was listed as being in practice in Lanesboro. In the official register of physicians of Minnesota of 1883-1909, his name appeared without post office address. His name was not included in the first (1907) issue of the directory of the American Medical Association.

Johan Christian Hvoslef (sometimes seen Hooslef), who became one of the distinguished citizens and physicians of Fillmore County, was born at Førde, Søndfjord, Norway, on August 24, 1839, a member of a family which gave several outstanding men to the political and professional history of Norway.

Well-trained in academic subjects at the Latin School and in general sciences at the University of Norway, both at Christiania, Johan C. Hvoslef came to America in 1872 and continued his studies at Rush Medical College, from which he was graduated in 1876. In the same year he was married to Karen Anderson of Wisconsin and came with his wife to Lanesboro, then a village of about 1500 people, where he lived and continuously practiced his profession until his death on October 11, 1920. Dr. and Mrs. Hvoslef had one child, a daughter, who died in Lanesboro at the age of six years. Dr. Hvoslef was survived by his wife and his sister, Mrs. Thorvold Klavanae, of Christiania. A brother, Nils C. V. L. Hvoslef, a state official of Trondjem, Norway, had died earlier.

Dr. Hvoslef's life in Lanesboro was that of the country doctor, able, faithful, overworked, unsung. It is a matter of record that in 1882, working with the State Board of Health, Dr. Hvoslef as health officer dealt efficiently with the local outbreak of smallpox. Under the Medical Practice Act of 1883 he received state certificate No. 466 (R) on December 28, 1883, which he filed in Fillmore County on October 28, 1889. He was a member of the official local and state medical societies and of the American Medical Association.

A quiet, modest, retiring man of distinguished ability, Dr. Hvoslef was not so well known in the state as he should have been. Besides being a skilled physician and surgeon who served his community well, he was a naturalist of distinction. Thomas S. Roberts, M.D., in his masterly work, *The Birds of Minnesota,* recognized Dr. Hvoslef's ability as a physician and paid tribute to him as a naturalist:

> Perhaps no one man did so much to develop a knowledge of the bird-life of a single locality in the state as did Dr. Johan C. Hvoslef. . . . He was a well-trained man and, possessing an intense interest in natural history and a methodical and painstaking type of mind, he was well fitted to make an intelligent, careful study of the region in which he passed the greater part of his life. Throughout the entire fifty-four years, he kept a detailed diary in which he recorded all his observations, covering the whole field of natural history, though birds and plants were his first interests. There are fifty-four volumes of these journals, with three additional general notebooks. The year following Dr. Hvoslef's death, Mrs. Hvoslef very generously presented, in complete form, this life-work of her husband to the Museum, where it is now one of the most valued possessions. Dr. Hvoslef, during his life, had given to the Museum his collection of bird-skins, numbering some four hundred, and after his death, his wife donated a small collection of birds' eggs, among which were those of the blue-winged warbler, unique specimens for Minnesota.
>
> No part of these diaries have ever been published, but from them were taken the bird-migration records that Dr. Hvoslef sent to the United States Biological Survey at Washington over a series of years, and concerning which Mr. Wells W. Cooke, in one of the Survey bulletins, stated that the information from Lanesboro was the most satisfactory that had been received from any source. There is also on file at the Museum a considerable series of letters from Dr. Hvoslef, relating almost entirely to the bird-life of Minnesota, received by Thomas S .Roberts, M.D., Fellow of the American Orinthologists' Union, Professor of Orinthology and Director of the Museum of Natural History of Minnesota. Dr. Hvoslef's great modesty prevented his publishing at first hand the results of his work. This explains the absence of his name from the Minnesota bibliography. But he generously and freely supplied information to others, and thus he is quoted, second hand in many connections, as authority for original and valuable records. All the records from Lanesboro in this work

are from Dr. Hvoslef's work. Fortunately he recorded carefully and accurately everything that came under his notice, and the Minnesota bird-students owe no small debt of gratitude to this retiring but accomplished and hard-working man of science.

George E. Jackson for many years a practicing physician of Minnesota, was a graduate of Rush Medical College in 1880, and under the Medical Practice Act of Minnesota of 1883 received state certificate No. 9 (R) on October 11 of that year. He then was living in Fergus Falls, in Otter Tail County. Strangely, it has been impossible thus far to discover more than isolated bits of information concerning this well-qualified physician.

On June 9, 1885, George E. Jackson, M.D., a graduate of Rush on February 20, 1880, registered in Dakota Territory as in practice at Lakota, Nelson County; during his residence in Dakota he was appointed County Superintendent of Health.

Dr. Jackson returned to Minnesota probably in the late nineties, and by 1899 he had settled in Chatfield, Fillmore County; in that year at a meeting of the Southern Minnesota Medical Association in Owatonna, in Steele County, he was elected to membership. Dr. Jackson remained in Chatfield at least into 1912. His name did not appear in the issue for 1914 of the directory of the American Medical Association.

Charles H. Jacobson was born in Norway on May 17, 1856, received his early education in the schools of his native place and, in 1871, at the age of fifteen years, came to America and settled in southern Minnesota. After working for five years in the drug store of Albert Weiser in Preston, he decided on the study of medicine and entered the Bennett Electic College of Medicine and Surgery, from which he received his degree of doctor of medicine in March, 1879. Immediately after his graduation, Dr. Jacobson improved his medical knowledge by taking a special course at the Chicago College of Ophthalmology and Otology before returning to establish himself as a physician in Preston. In 1881 and 1882, at least, he was in active practice, and that he used his specialty is evidenced by the following item in the *National Republican* of Preston of December 29, 1881: "Lost by Dr. Jacobson: A myopodiartotican, used in cases of myopia."

The fact that, subsequent to 1883, Dr. Jacobson's name did not reappear in the state gazetteer which had carried it previously is inconclusive evidence that he had gone elsewhere. It is significant, however, that he was not listed in the official directory of physicians in Minnesota of 1883-1890, nor in the edition next following.

J. Ross Johnson was born on July 18, 1855, at Oak Leaf, Ontario, Canada, the son of Mr. and Mrs. Samuel Johnson, who were farmers. In 1883 he was graduated from the Medical School of McGill University, and shortly afterward came into the Middle West of the United States, to settle in Spring Valley, Minnesota, at the suggestion and request of friends from Canada who already had established themselves in that community. On October 13, 1883, under the new Medical Practice Act of the state he received license No. 150 (R). That he at once identified himself with the medical profession of the state is evidenced by his election to membership in the Minnesota State Medical Society at the annual meeting held at Minneapolis, in Market Hall, on June 19, 1883. At this same meeting, one of his senior colleagues, who had been in Spring Valley since 1871, Dr. Russell L. Moore, became third vice president of the association. Dr. Johnson allied himself with the local group of physicians in Fillmore County and, in 1904, on organization of the Houston-Fillmore County Medical Society, became an active member.

J. Ross Johnson was married on August 30, 1882, to Jennie Green, a Canadian, and brought his wife with him to Spring Valley. They had three children, Florence, Charles Harcourt, and Harry H. Johnson. When Mrs. Johnson died in 1894, her body was taken back to Canada for burial. In 1897 Dr. Johnson was married to Martha Banks; there were no children of this marriage.

Dr. Johnson belonged to a family of which two other members who were physicians came into southern Minnesota. His brother, Dr. Charles Harcourt Johnson (1859-1917), newly graduated from McGill University, settled permanently in Austin, Mower County, in 1884. His half-brother, Dr. William Nassau Kendrick (1872-1936), also a graduate of McGill, in 1896, in that year began practice with him in Spring Valley; from 1898 to 1905 Dr. Kendrick was in Austin in partnership with Dr. C. H. Johnson, but in 1905, on the death of Dr. J. Ross Johnson, he returned to Spring Valley to carry on his half-brother's practice.

Dr. J. Ross Johnson is recalled as a fine man and citizen, a physician and surgeon of unusual knowledge and skill, whose favorite diversion was fishing and whose love of horses was a distinguishing quality. In those pre-automobile days, he kept, like many of his confreres, from six to eight excellent driving horses most of the time, and although he drove them hard, he handled them with skill and consideration and gave them the best of care. Only ten days before his death in February, 1905, he drove sixty miles in a cutter.

His son, Dr. C. H. Johnson, has recalled that Dr. Johnson in his heavy and widespread practice used to consult on occasion with his near-by colleague, Dr. Albert Plummer, of Hamilton (later of Racine), and that he was "a great admirer" of Drs. William J. and Charles H. Mayo, who sometimes were called in consultation into the community.

The death of Dr. Johnson on February 27, 1905, at the height of his usefulness, was a sorrow and loss to Fillmore County. Dr. Johnson was survived by his wife, who in 1943 was living in Austin, Texas; by his two sons, Harry H. Johnson, a jeweler of Spring Valley, and Charles H. Johnson, who has been a physician since 1912, in Spring Valley since 1916; and by his daughter Florence (Mrs. Claude W. Rossman, of Minneapolis). Mrs. Rossman's death occurred in the nineteen thirties.

In speaking of his father, Dr. Charles H. Johnson commented on the advances and conveniences in medical practice of later years of which the older man could not know. In his times calories and vitamins were not recognized factors in nutrition, the value of roentgen rays in medicine had not been fully realized, and the sulfa drugs were unknown. "It seems too bad that he was born too soon and died at the age of forty-nine, just a young man."

Henry Jones was born on March 13, 1845, on a farm near Nashville, Ohio, the son of William Jones, who was of Welsh blood and a native of Steubenville, Ohio, and Sarah Collier Jones. His mother was descended from an English family who had come to America early in the eighteenth century; her grandfather twice was sent to Congress from Ohio when the state was young. Henry Jones had seven brothers and sisters: William, Sylvester and

Samuel, Mollie Wright, Sue Rose, Elizabeth Hunter and Evangeline (Mrs. Warner, of Morrison, Illinois, the only member of the family living in 1941).

Henry Jones grew up on his father's farm, receiving his early education in the schools of Nashville. In his nineteenth year he enlisted in Company B of the Sixtieth Ohio Regiment of Volunteer Infantry and with it served at the front until he was wounded at the battle of Petersburg; on his release, after ten months in a hospital in Philadelphia, he received his honorable discharge from the army and returned home. Before continuing his formal education, he worked for a time, loading lumber on the first trains to pass through Ohio. During 1866 and 1867 he was a student at the Franklin Institute in Prophetstown, Illinois, and for a year studied medicine under Dr. J. H. Mosher of that city in preparation for enrolling at Rush Medical College in 1869. Graduated from Rush in February, 1871, he began his medical career in the village of Granger, Bristol Township, Fillmore County, Minnesota, but in September of the following year, because of superior financial opportunity, he moved to the larger place of Preston, in Preston Township. He was succeeded in Granger by Dr. Don J. Lathrop, who arrived in the spring of 1872. In Preston, Dr. Jones remained in active practice for forty-six years, during which he numbered among his fellow physicians Lafayette Redmon, James H. Phillips, John A. Ross, Lyman Viall and George A. Love, as well as many others who came and sooner or later passed on. And during these years, like all the other physicians of the period and region, he met the discomforts and hazards of carrying on a country practice in all weathers and over all roads. Excerpts from old records and newssheets give glimpses of him at work: assisting Dr. Ross "in the presence of Mr. Love, a medical student," to perform an autopsy on the body of a child who had died from cerebrospinal meningitis; refusing, after he had been called on a case which proved to be one of smallpox, to see other patients or to appear in public until danger of conveying the disease to others had passed; performing an operation, with Dr. Lathrop, for removal of a ruptured eyeball, under chloroform anesthesia, on an old gentleman who lived near Granger.

On December 24, 1874, Henry Jones was married to Bertha A. Loomis of Preston. The only child of the marriage, Charles Henry, died in infancy; Mrs. Jones died in 1878. Dr. Jones in 1881 was married to Ella Gray of Decorah, Iowa, and to this marriage were born three children: Mabel, who died young; Rodney C., who became a musician, at one period living in Wallace, Idaho, and in later years in Minneapolis; and Millie M. (Mrs. I. Kasten, of Chicago).

In 1882, to meet the conditions of practice of the times, Dr. Jones took up the study of dentistry and thereafter was both dentist and physician, but especially dentist. There were many items in the local newspaper of those years which mentioned his skill and fine equipment or which stated that Dr. Jones, Preston's popular dentist, had just returned from a successful tour and would remain in his home office for about two weeks.

On December 31, 1883, under the new ruling of medical practice in the state, Dr. Jones received certificate No. 668 (R). From 1872 to 1877 his professional card appeared in *Western Progress*, the newspaper of Spring Valley, as well as in the local papers, and his name was listed in Polk's gazetteer almost continuously from the late seventies for many years. From January 6, 1889, to January 6, 1891, he was coroner of Fillmore County.

(Continued on Page 186)

President's Letter

Physicians Obligated to Remedy Conditions in State Institutions

THE responsibility for the health of the citizens of Minnesota rests squarely on the shoulders of its physicians, and it is the purpose of every member of the Minnesota State Medical Association to discharge this obligation in an efficient, humanitarian and ethical manner. We take pride in the standards of medical care in rural and urban communities. We are proud of our state program for the control of contagious disease, of our public health activities, of our record in the military service and at home during the war. However, in one field, one in which we find the largest number of patients, conditions exist which are far from desirable. I refer to the mentally ill who inhabit our state institutions and who constitute a profound responsibility of the physicians as well as of other citizens of the state.

More than 50 per cent of hospital beds in Minnesota are occupied by patients who suffer with mental disease. Such patients in the state reach the astonishing total of almost 11,000, and in this number are not included those individuals who are registered in the school for the feeble-minded at Faribault and the epileptic colony at Cambridge. The fact that these individuals represent such a large proportion of the families of the state proves that care of the patients in many instances constitutes a serious social problem.

The publicity which recently has been directed against certain hospitals for patients suffering with mental disease has aroused much adverse criticism. It should reveal the great responsibility which falls on all reliable citizens of this nation. In physical equipment and proportionate size of professional staffs, Minnesota institutions compared favorably with those of most other states twenty years ago, but this condition does not exist today. No longer can we coast along on such an illusion. There is more good fortune than merit in the fact that the institutions of this state escaped the humiliating glare of recent investigations.

A survey of state hospitals conducted in 1939 and 1940 revealed that too few physicans were engaged in caring for patients suffering with mental disease. Specifically, it was learned that in Minnesota there was only one physician for every 435 patients in our state institutions. At this time I believe that the national average is one physician for every 250 patients. The ratio of attendants and ward personnel in 1940 was one for every fifteen patients. The standard approved by the American Psychiatric Association is one physician for every 150 patients and one attendant for every 5.6 patients.

The responsibility for these conditions is not that of the superintendents of the institutions. I am reliably informed that the service which they have rendered, with their limited professional and attendant staffs, has been heroic. This is especially true in Minnesota where problems have been presented to the legislature repeatedly through the Director of Public Institutions, who acts as the intermediary agent of the superintendents of the institutions. Their requests for facilities sufficient to insure standard, adequate care of their patients often have been sidetracked until other demands have been satisfied, and what has been left of the budget has been sufficient to afford only a custodial level of patient care. Minnesota now ranks very low among the states of the nation in per capita expenditure for the mentally ill.

Apparently, the chief interest evinced by our legislature has been in the housing of patients. Undoubtedly, this phase of the problem has been, and is, serious. Today almost 11,000 patients are crowded into space which originally was intended for not more than 8,000. In certain institutions, overcrowding runs as high as 30 per cent and conditions exist which run counter to regulations of the State Fire Marshal as well as those of the State Board of Health. These statements are no doubt unpalatable, and what makes them peculiarly so is the fact that it is impossible to refute them.

In spite of the obvious need for funds for physical equipment, I doubt that this phase of the problem is nearly as serious as that which exists because of lack of other facilities for the care of patients. Measured in terms of human values and in the light of our responsibility to the citizens of the state, we have a great duty. We must provide adequate programs of therapy in order that patients may be returned to productive life. We must use every means to prevent recurrence of illness and to provide facilities for counsel and guidance in order to prevent the development of additional mental disorders in the community.

It is important that conditions pertaining to a form of illness which afflicts half the patients in hospitals of the State of Minnesota should be understood by our legislators. If these patients are to receive adequate medical care, the cost during the next few years will be great. It should be great. It is a justifiable expense. It is an appalling fact that the per capita per day cost in our state institutions barely exceeds one dollar. It is almost unbelievable. The standards set up by the American Psychiatric Association are $5.00 per capita per day for patients who suffer with acute conditions and $2.50 per capita per day for those who are chronically ill. Evidently, these facts are not well known to our legislators. It is the responsibility of the physicians of the state, as well as of other responsible citizens, to make it known that our goal is adequate treatment and comfortable housing for every patient in our state hospitals for the mentally ill. This must be done without further delay, in order that we may look forward to a decreasing, rather than an ever-increasing, custodial population in our state hospitals.

Louis a Buie

President, Minnesota State Medical Association

HISTORY OF MEDICINE IN MINNESOTA

(Continued from Page 184)

Dr. Jones was an independent voter, was well read and tolerant. He was a member of the Presbyterian Church; of the Underwood Post No. 122 of the Grand Army of the Republic, and its commander for many terms; of the Independent Order of Odd Fellows and of the Masonic Blue Lodge of Preston, the latter of which he joined on December 17, 1873. An avocation which he made profitable for a number of years was the keeping of bees.

After forty-six years in Preston, "highly esteemed . . . respected for his virtues, attainments and labors," Dr. Jones moved to the town of Bethel, Anoka County, where he practiced medicine six years before retiring to California to make his home. He died in Monrovia on June 30, 1931, from the infirmities of old age. Mrs. Jones survived him, and until her death, on February 3, 1943, at the age of eighty-five years, resided with her daughter, Mrs. Kasten, in Chicago.

About **J. R. Jones** only one note has been gleaned. In an historical atlas of Minnesota, of 1874, of which he was a patron, there appears the entry that J. R. Jones was a physician, was born in Monroe County, New York, came to Minnesota in 1861, and in 1874 (and earlier, obviously) was living in Lanesboro, Fillmore County.

Of the career of **Emma Adeline Keeney** only an outline is presented. Emma Adeline ——— was born in 1876 (the surname is lacking, as is the date of her marriage). She was graduated from the College of Homoeopathic Medicine and Surgery of the University of Minnesota in 1897, and in April of 1898 received her license to practice in the state. There is evidence that she began her professional career in Spring Valley, Fillmore County, and practiced there for possibly a year; in a business directory of 1898-1899 appeared the name of "Mrs. E. A. Keeney" in the list of physicians of the town.

From Spring Valley Dr. Keeney moved to Austin, Mower County, where for a time she was in partnership with Dr. Fannie K. Fiester, who in 1893 had been graduated from the Woman's Medical College of Northwestern University. Evidently desirous of improving her professional knowledge, Dr. Keeney took graduate work, and in 1904 was graduated from the Hering Medical College of Chicago. Presumably she settled soon afterward in Albert Lea, Freeborn County, where she was practicing in 1907. In 1909 she was licensed to practice in the state of Oregon, and into 1914, after which further entry did not appear, she was in active practice in The Dalles.

(To be continued in March issue)

◆ Editorial ◆

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

STREPTOMYCIN

STREPTOMYCIN is now available to the profession, and reports indicate its great value in a limited number of infections. Its high cost will necessarily limit its use. The fact, too, that various strains of the same bacterial species differ widely in their sensitivity to streptomycin, and that its absorption by individuals differs so greatly, has made evaluation of its usefulness difficult.

Streptomycin has been found of value in the treatment of a number of infections due to both Gram-negative and Gram-positive bacteria. Perhaps the most important are urinary tract infections due to Gram-negative organisms, infections due to certain strains of Escherichia coli, Proteus vulgaris, and Aerobacter aerogenes, as well as Salmonella pneumonia due to Friedlander's bacillus, and Hemophilus influenzae infections and tularemia.

Streptomycin is administered in much the same fashion as penicillin. However, it is more likely to produce toxic symptoms than is penicillin. In larger doses it sometimes affects the eighth nerve, producing deafness or dizziness or both, which, though usually temporary if the drug is withdrawn, may become permanent. Urticaria is not uncommon as a side effect.

The new antibiotic can be given orally, intramuscularly, intravenously or intrathecally. The intramuscular route is preferable, with 1,000,000 to 3,000,000 units being given daily. Recently the metric system has been adopted in defining dosage, 1 mg. of streptomycin being equal to about 1,000 units. Solutions containing 0.1 to 0.2 gram (100,000 to 200,000 units) per c.c. may be used intramuscularly, but for intravenous administration the twenty-four hour dosage of 1,000,000 to 3,000,000 units should be diluted in 1 or 2 liters of isotonic salt solution. Single injections of as much as 0.1 gram (100,000 units) have been given intrathecally in 5 to 10 c.c. of normal saline. Concentrations of the drug as high as 50,000 units in 1 c.c. of isotonic saline solution have been used for insufflation by a nebulizer for bronchiectasis, without evidence of irritation.

The routine use of streptomycin for urinary tract infection has been disappointing, according to Nichols and Herrell.[2] When the urinary infection was due to Proteus ammoniae or Aerobacter aerogenes, the best results were obtained. It seems important that the urine be alkaline and that urinary stasis be overcome before favorable results can be expected.

If treated early in the disease, tularemia seems to respond well to streptomycin.[1] Influenzal meningitis is another infection which responds well to this new antibiotic. Experience with its use in tuberculosis is thus far insufficient to establish its value in this disease.

A point that deserves consideration is that streptomycin should be given in effective dosage from the start, for it has been found that some strains of bacteria develop resistance to the drug.

Experience with this new antibiotic has been sufficient to prove it a valuable addition to the relatively short list of specific drugs we possess.

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1. Howe, Calderon, et al.: Streptomycin treatment in tularemia. J.A.M.A., 132:195, (Sept. 28) 1946.
2. Nichols, Donald R., and Herrell, Wallace E.: Streptomycin. J.A.M.A., 132:200, (Sept. 28) 1946.

FLUIDS IN HEART DISEASE

"SALT-FREE" diets and restriction of fluids in the presence of edema have been in vogue for a number of years. Only recently has it been learned that it is the sodium, whether it be in sodium chloride or sodium bicarbonate, which should be restricted in the presence of edema, from whatever cause, and that limitation of fluids is wrong.

According to theory, the normal interchange of fluid between the circulation and the body tissues depends on hydrostatic pressure and osmosis. With the pressure in the precapillary vessels greater than the osmotic pressure in them, fluid escapes into the tissues. Since pressure in the postcapillary vessels is less than that in the precapillary vessels and is also less than the osmotic pressure in the postcapillary vessels, there is a withdrawal of fluids from the tissues. A lowering of the plasma contents of the blood would result, according to this theory, in a greater diapedesis of fluid from the precapillary vessels into the tissue spaces, and would also cause a lessened absorption of fluid from these spaces into the postcapillary vessels, as a result of the lessened osmotic pressure-effect of the plasma.

In the presence of cardiac decompensation, with diminished cardiac output and increased venous pressure in the postcapillary vessels as well as in the rest of the venous system, the return of fluid to the postcapillary vessels from edematous tissue spaces is hindered. Edema fluid contains salt, among other elements, corresponding to the blood content. Along with venous congestion, then, the kidney output is diminished in quantity, and its sodium chloride content is lowered.

Theoretically then, the reduction of edema should be favored by any factor which improves circulation and relieves venous congestion, by the restriction of salt in the diet and thus in the circulation, and by diuresis, whether it be from increased water intake and elimination through the kidneys or from the administration of mercurial diuretics. This has been found to be the case.

While the value of salt restriction in the presence of edema has been recognized for some years, Schemm was the first to call attention to the fact that if sodium, in the form of sodium chloride and sodium bicarbonate, is eliminated as far as possible from the diet, fluids not only need not be restricted but are beneficial in reducing edema if given in large amounts. While a "salt free" diet is unpleasant for the cardiac patient, the recognition by the physician of the needlessness of thirst in the treatment will be most welcome by the cardiac patient.

MORE NURSES NEEDED

THERE is still a great need for more nurses, both trained nurses and practical nurses. In publicizing the need and the advantages of training in the profession of nursing, a publicity campaign has been undertaken, and informative material has been sent to the Federated Women's Clubs throughout the state and to the members of the Hospital Auxiliary. The subject is one of timely importance and might well be taken up by the Woman's Auxiliary of the Minnesota State Medical Association.

Representatives of the state nursing, hospital and medical associations have been meeting to formulate a bill agreeable to all three interested professions, providing for legislative action for the licensing of practical nurses by the the present legislature. It is to be hoped that agreement as to details will be reached, so that provision will be made for this licensing of practical nurses, a procedure which should stimulate recruiting of young women for the short course in training.

At the special meeting of the House of Delegates of the Minnesota State Medical Association on December 22, 1946, in Saint Paul, approval was given for the establishment of ten more schools of nursing with a three-year course leading to the title of registered nurse, and for twenty additional schools providing one-year courses for the training of practical nurses.

It seems that action will be taken by the present legislature providing for "licensed practical nurses." In anticipation of this outcome and in view of the great need of registered nurses and practical nurses, physicians can render a service by referring young women to the headquarters of the Minnesota Nurses' Association, 2642 University Avenue, Saint Paul 4; to the Franklin Hospital School for Practical Nursing, 501 West Franklin Avenue, Minneapolis 5; or to the Vocational Hospital, 5511 Lyndale Avenue South, Minneapolis 9, for detailed information as to requirements and opportunities for training in nursing.

CONSUMERS COOPERATIVE MEDICAL CARE

THERE is every evidence that Consumers Cooperatives are going to submit legislation to the present legislature to enable them to provide medical service for their members. They propose to furnish this service through the employment of physicians to care for co-operative members and their families. Such services are to be consumer controlled, in contrast to the various plans being promulgated by the various medical associations, and medical care is to be sold like other commodities such as food and merchandise.

One fundamental difference between the Consumers Cooperative plan and types of sickness insurance, a vital difference in the minds of the public as well as the medical profession, is that in co-operative supplied medical care there is no free choice of physician. The co-operative member receives his medical care from the employed physician or surgeon whether he be good, bad or indifferent. If there is one prerogative of which the American citizen is jealous, it is that when he is ill he can obtain what in his mind is the best available medical advice. Physicians, too, have insisted on the importance of maintaining the free choice of physician whenever possible, in order not to abrogate the stimulating effect of free competition on the quality of medical care.

Assuming that co-operatives may be able to employ first-class physicians, it seems quite probable that such physicians, being employes, will of necessity be dictated to in the matter of what services they may give their patients in the way of hospital care, medicines and the like. The holders of the purse strings must of necessity be largely interested in costs, and freedom of medical care is sure to be hampered.

MOBILE SPEECH CLINIC UNDERTAKES SURVEY

A concerted effort is under way to ferret out the speech and hearing handicaps among Minnesota's school-age children—handicaps which may hold them back in their classwork or contribute to making them social behavior problems.

A complete survey of the speech and hearing needs of 400,000 school children is the goal of the Mobile Speech Clinic of the University of Minnesota, staffed by the University and financed by tthe Minnesota Association for Crippled Children and Disabled Adults, Inc., from funds derived through sale of Easter Seals.

Directed by Miss Laila L. Larsen of the University, manned by Miss Larsen and two experienced clinicians and equipped with two pure tone audiometers and a Sound Scriber, the station-wagon-clinic will tour the state for three to five years on a project which both university and Minnesota Association officials hope will do much to waken the general public to the needs of the mentally competent but physically handicapped.

They see the whole problem as a continuous one, not one which can be solved by a traveling clinic in three or four or five years.

They foresee the time when, partly as a result of this initial project, public opinion will support long-range plans to give every child, no matter how remote his home or school, the opportunity to receive expert examination and early treatment of his handicap.

They hope to see the time when more and more special teachers and clinicians will be trained to staff permanent clinics set up to serve given areas of the state.

For purposes of research, the clinic, under the general administration of Dr. Bryng Bryngelson of the University, will gather data regarding such important questions as the effects of foreign language background on speech.

It will attempt to correlate the speech and hearing difficulties of children with behavior problems and with failures in school, especially in spelling and reading.

Still another aim is to compare the effectiveness of testing with pure tone audiometers with that of screening with group test audiometers.

Although the Minnesota survey is not the first of its kind in the United States—others are in progress in Indiana, Iowa, Illinois, Oregon, Pennsylvania, Michigan and California—it is the first ever to use the pure tone machine which tests in all ranges of sound rather than in the speech range only. Every child is examined individually.

Since the staff of three—Miss Larsen, Gertrude Russell, hearing clinician, and Virginia Worthington, speech clinician—set out in their station wagon last September, they have covered two counties, surveyed sixty-seven schools, given 20,398 survey tests.

Through January 20, they had examined 10,866 school children in Washington and Stearns Counties, and had found that one of every five or six had some speech defect, while one of every fourteen or fifteen had a hearing handicap in need of special attention.

Of 9,208 children tested for speech, 614 had marked and 1,034 had slight defects. Of 11,190 tested for hearing, 519 had marked and 261 had slight disabilities.

Every disability, however minor, discovered in the screening test is followed up with a private conference with the child and his parents or teacher. While the first test requires about two minutes, an interview may last from fifteen minutes to an hour while the clinician investigates the background of the handicap.

Individual reports are forwarded to parents and teachers, summary reports and recommendations to the State Board of Education and the clinic's sponsor, the Minnesota Association for Crippled Children.

The clinic concentrates on diagnosis, not prescription, and parents are informed that the individual reports should be passed on to the family doctor to whom the child is taken for treatment.

However, when the clinicians' tests indicate that a child may respond to certain treatment, a recommendation to that effect is enclosed with the routine report.

Results in other states reveal that 20 to 40 per cent of handicaps uncovered in surveys actually do receive follow-up medical care.

Greater co-operation between parents and doctors can raise this percentage, Miss Larsen believes, but frequently the doctor must go out of his way to make up for parents' lack of initiative in bringing their children for treatment.

Often, she believes, the doctor takes it for granted that parents of course will return to him if an infected ear for which he has prescribed does not improve; or if a child, brought for consultation because he has not learned to talk at a normal age, does not overcome his retardedness in a reasonable length of time.

And too often, she continues, parents assume that because the doctor did not specifically request to see the

(Continued on Page 222)

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

AMA HOUSE OF DELEGATES AGENDA INDICATE ASSOCIATION'S GROWTH

Several topics were under discussion at the midwinter session of the House of Delegates of the American Medical Association, held in Chicago, December 9 to 11—topics which give evidence of the amazing rapidity with which the association has grown and the multiplicity of its functions.

On the agenda were such important subjects as improving health conditions in the coal mining areas, the possible significance of the new United Mine Workers' Health Fund, and ways and means whereby the medical profession can help the nation successfully realize the maximum benefits from the broad features of the Hill-Burton Hospital Construction Program.

Other matters taken up were the establishment of representation for the Veterans Administration in the fellowship of the association and in the House of Delegates; continued progress in the development of prepayment medical care plans; membership for general practitioners on hospital staffs; certain revisions in the constitution and by-laws; and plans for the observance of the association's one hundredth birthday at the 1947 annual meeting in Atlantic City.

Delegates Meet in "Free Atmosphere"

In a brief address before the assembly, the president, Dr. Harrison H. Shoulders, declared that this meeting "was being held in a different atmosphere from that which existed in July and from that which has been in existence for quite some time." He told the delegates that today's atmosphere "approaches freedom—the freedom to go forward in the accomplishment of the great mission of medicine."

Dr. Shoulders said that the AMA is a strong organization—an organization with a past of which it can be justly proud and a future of which it can be hopeful.

Dr. Olin West, president-elect, added a firm second to Dr. Shoulders' remarks and voiced his confidence in the continued progress of the association in its efforts to promote the art and science of medicine. He called on physicians to do their utmost toward what he termed "the development of new financial techniques which will make medical care more available—the financing of it at least—to people of moderate means."

Conditions in Mining Areas Discussed

Much interest and attention at the conference centered on medical care and sanitary conditions among mine workers and their families. Present to report was Rear Admiral J. T. Boone of the U. S. Navy Medical Corps, who, as medical advisor to the Federal Coal Mines Administrator, organized and has been directing a survey of medical, hospital and general health facilities and sanitary conditions in the areas where bituminous coal is mind.

As a preface to his report of the situation in mining communities, Admiral Boone noted that the war years have been accompanied by "changes and dangers of a legislative nature" and that the medical profession has been confronted with a welter of new laws, bills and regulations bearing directly on public health and medical and hospital care. He reasoned that such proposals as have received so much public support stem from *real* as well as imagined needs of the people. They are symptoms, he said, of dissatisfaction with the medical profession as it practices its art today; and he declared that "physicians themselves should be the first to recognize these symptoms, diagnose the cause and prescribe the remedies, which will not merely allay the complaint, but produce the cure."

Mine Workers' Plight Is Vital Problem

While Admiral Boone recognized the fact that substandard health and sanitary conditions among coal miners is only *one* of the problems facing the medical profession, he said that it was nonetheless of vital importance.

Admiral Boone went on to describe the survey of mining communities which, under his direction, is now rapidly drawing to a close. The survey, initiated some six months ago by the Federal government and the miners' union when the government was operating the mines, Admiral Boone said, called for a review of conditions which would serve as a basis for providing miners some day with medical, housing and sanitary facilities conforming to recognized American standards.

Since the survey report was not yet complete, Admiral Boone did not feel he could reveal any specific and official results or conclusions to the delegates. However, he did present some personal observations, and he called to the attention of the House of Delegates, as a representative group of American doctors, what he said "would seem to be of major concern to organized medicine."

"The apparent weakness in public health programs in the nation's coal mining regions are deeply disturbing," Admiral Boone pointed out. He had observed, as a general rule, such inadequacies as poor water supply controls, improper sewage and garbage disposal, lack of "reasonable safeguards" against contamination from human and animal wastes, lack of protection in food and milk handling, and poor insect and rodent control. The number of mining communities with adequate facilities, he added, were too few in number to stand out as exceptions to this rule.

Lack of Public Health Work

It had been very disappointing, Admiral Boone said, to note what he called "a schism between curative medicine and preventive medicine." To explain this point, he said that, in the communities he visited, he inquired into the public health work done by "company physicians," and he found that very little was done beyond the usual school health programs of immunization. He found physicians so busy with their practice of curative medicine that they were reluctant to concern themselves with assuming leadership in public health, especially when there was so little to work with in the way of understanding and willingness to understand on the part of the miners themselves.

Admiral Boone said he believes that not only does this condition exist in coal mining communities but it exists "far too generally." "I believe," he said, "that organized medicine can perform a noble task in closing the gap between curative medicine and preventive medicine." And he added, "Public health is not exclusively the concern of government."

"What we have seen," said Admiral Boone, referring to the subhealth standards uncovered by his investigations, "should rightly be the concern of every doctor, from the specialist in Chicago and New York to the general practitioner in the Appalachians. The health problem in the coal fields cannot be dismissed as a matter affecting less than 2 per cent of the population of the country or merely a few hundred physicians.

"As you well know, since diseases can become epidemics . . . since illness and disease in one segment of the population can and does affect the health and welfare of the entire nation, I am sure that you agree with me when I say that if we can help raise the health standards of coal-mining communities, we can contribute to the national well-being."

Background of United Mine Workers' Health Fund

Admiral Boone then turned to a discussion of the background and probable implications of the recent establishment by agreement between Secretary of the Interior J. A. Krug and the United Mine Workers' head, John L. Lewis, of the UMW Health Fund, which has been "highly disturbing" to physicians who practice in the coal-mining communities and to other physicians as well.

This fund, which is to be administered by trustees appointed by the president of the UMW, is to be accumulated from wage deductions of mine workers and is to be used for medical, hospital and related purposes "at the discretion of the trustees of the fund."

Collections for the fund, according to Admiral Boone, have not yet started, but what changes in the present system of medical practice will follow its establishment, no one, except possibly a few persons inside the UMW, can foretell.

Said Admiral Boone: "The mine physicians, I understand, are not so much concerned about their economic security as they are about the maintenance of their professional status. That is the concern of all medical men, because the establishment of this particular medical fund may be the precedent for similar funds in other industries."

What changes this new departure, which may inject third parties between physicians and patients, will tend to bring about in medical practice, no one knows, said Admiral Boone. It is evident, however, he added, that the AMA has been handed a problem which cannot and is not overlooking.

"The views which organized medicine takes in handling such problems will help to fashion the pattern that is eventually evolved," Admiral Boone concluded. "Organized medicine must dissipate any emotionalism that beclouds sound reasoning and must assume leadership in the formulation and establishment of reasonable and practical programs that will benefit the people."

Delegates Act on Admiral's Advice

After hearing the Boone report, the Council on Medical Service made definite recommendations with regard to action which the AMA should take. In its report to the House of Delegates, the Reference Committee on Medical Service approved of the action suggested by the council, that the council shall continue to follow closely the developments of the bituminous coal situation. The report said that "it is recognized in these proposals (the UMW Health Fund) a new type of economic philosophy, one with far-reaching implications and concerns, which well may influence and possibly change the whole basic pattern of medical practice.

"The manner in which these funds ultimately will be administered, and the instrumentalities through which medical care will be delivered, will require our careful study and guidance. Such plans as these doubtless will occupy a prominent place in any collective bargaining of the future. . . . We shall have to project ourselves into this developing situation and play a leading role in the evolution of these plans for medical care."

Need for "Planned Co-operation" in Hill-Burton Program Stressed

How the Council on Medical Service is trying to impress all state medical societies with the importance of planned co-operation to the successful carrying out of the provisions of the Hill-Burton law, was reported to the delegates by that body. As a service to state societies it is preparing a set of principles as a guide to such co-operation, and a set of minimum standards for diagnostic clinic facilities.

In addition, the medical profession, through its state and county societies, is being encouraged by the council to participate actively in all plans or programs formulated under the bill. Each state medical society, the council recommends, should have good representation in the agency charged with the responsibility of carrying out the provisions of the law in its particular state.

The council's report to the delegates drew attention to the fact that it is up to the state medical societies to see that facilities are placed only where a specific need for them is shown, and that diagnostic clinic facilities are erected only with the sanction of the county medical society concerned.

Formation of Health Councils Recommended

Among the other recommendations of the Council on Medical Service was one regarding the establishment of a National Health Congress, proposed in January of last year. The report favored "formation of state or local health councils to meet local needs and enlist the co-operation of their interested bodies," and said that the council will continue to work on such a program by calling a meeting of local health councils and other interested groups to discuss the value and scope of such councils and to draw up a model outline for their formation.

The council reported that after much study it feels that the setting up of a National Health Congress as a permanent body would not be advisable. Such a body, it pointed out, "would be bound to duplicate the efforts, and to a certain extent usurp the prerogatives, of this House of Delegates and other AMA bodies."

"In the opinion of the Council," the recommendation read, "it would be far better for the Board of Trustees, the Council on Medical Service and other AMA Councils to call conferences, whenever deemed advisable, on subjects on which the advice and co-operation of their bodies is desirable. In this way, different groups could be called on in matters pertaining to their specific fields; and there would not be one set group to consider every subject." Therefore, the council asked specifically to have its previous instruction for the establishment of a National Health Congress rescinded.

Delegates Act on Variety of Questions

Several important decisions were made by the House of Delegates, specifically:

1. An admendment to the by-laws was voted, making it possible for general officers and delegates in the association to be nominated to the presidency without first having to resign from the position held.

2. The delegates passed an amendment permitting admission to fellowship in the AMA, without payment of dues, to members of the permanent corps of the Veterans Administration, for so long a time as they should remain with the Administration.

3. A resolution turned over to the Board of Trustees for "serious consideration" was one intended to promote closer co-operation between the medical and dental professions by the appointment of a committee of five AMA members to work with a similar committee set up by the American Dental Association, "inasmuch as physicians and dentists have a common interest in the extension of health service." It was recommended that this move be carried through on the state level also.

4. Another resolution called for the establishment of general practice sections in approved hospitals, specifying that these appointments should be made by hospital authorities "on the merits and training of the physician," and that "membership on a hospital staff should not be dependent on certification by the various specialty boards or membership in special sections."

5. The establishment of a certifying board to determine the qualifications for general practice was the subject of a related resolution, asking that the Section on the General Practice of Medicine of the AMA give consideration to a plan for the establishment of such a board, and that the section make a preliminary report to the House of Delegates in June at Atlantic City.

6. As a result of deliberations at this session of the House, there is now at association headquarters a Division of Public Relations, under an executive assistant to the general manager, which will handle public relations activities for all councils, bureaus, publications and other agencies and operations of the association.

7. The delegates approved a resolution directing the Council on Medical Service and the Council on Industrial Health to "continue close co-operation with mine physicians in an effort to improve and maintain the high standards of medical practice."

Bureau of Medical Economics Reorganizes

It was announced by the Bureau of Economic Research (formerly the Bureau of Medical Economics) that under the leadership of its new director, Professor Frank G. Dickinson, it plans to reactivate and expand, with the emphasis on research.

A current job of this bureau is an extensive survey of medical services in each state. Questionnaires are being sent to county medical society secretaries, asking them to draw on a state highway map a line around the area served by physicians located in each county medical center.

The bureau is also assisting with the tabulating and analyzing of the completed questionnaires now pouring in from the thousands of returned medical officers. Reporting that the response in this survey has been remarkable, the bureau promises to study the some 20,000 questionnaires and will file a report with the Committee on National Emergency Medical Service, which is directing the survey, some time in April.

Elaborate Plans for Centennial Announced

Elaborate plans for the AMA centennial celebration in Atlantic City, June 9 to 13, which promises, according to the skeleton outline presented to the delegates, to be "the high point in the assemblages of physicians anywhere in the world," were announced. Plans include a banquet honoring leaders in industry and the various occupations associated with medicine, at which time distinguished speakers will comment on the influence of American medicine on the nation's progress.

A religious service on Sunday, June 8, presenting three great religious leaders who are to speak on the spiritual aspects of medicine and health, will be broadcast from Atlantic City. Plans are to invite ministers throughout the nation to join the observance by speaking on similar topics.

The outline promises that the annual meeting will present the largest technical and scientific exhibit ever developed by the AMA, and will include a public exhibit set up on the boardwalk, depicting the progress of scientific medicine. Genneral and special sessions are scheduled; distinguished foreign guests are being invited, and a motion picture program is planned which will include, among other special showings, a film on the evolution of the scientific medical motion picture.

Washington's "New Political Flavor" Reviewed

Delegates heard a review of the complexion of the new Congress in a report from the Bureau of Legal Medicine and Legislation, in which the names of new committee chairmen were listed and predictions were made as to what the "new political flavor" in Washington would mean in the way of medical legislation.

Plans were announced at the session for a Second Annual National Conference on Rural Health to be held February 7-8 in Chicago, in order to provide farmer and doctor with another opportunity to exchange views regarding the many questions which are of vital importance in developing better health service in rural areas.

The Council on Industrial Health reported that it is watching closely developments in the World Health Organization, noting in its report that "information is not yet available, particularly regarding the status of industrial hygiene in the proposed organization." It was observed that there will probably be a mixed committee of public health experts, representatives of the International Labour Office and the World Health Organization itself, to consider matters of social insurance and industrial hygine. Meanwhile, the council reported, the United Nations organization is establishing itself in New York and is setting up a health program for its employes, who will probably number about 2,000.

Included in the industrial health report was an interesting bit relative to this "Atomic Age." The council is deeply interested in the organization of the Board of Consultants on Atomic Energy, being set up under the sponsorship of the Council on Physical Medicine. The report says that "since it is proposed to use nuclear energy in industry as a source of power, the question of occupational risk is of considerable importance." A symposium of atomic energy in industry and medicine, under the joint auspices of the Council on Physical Medicine and the Council on Industrial Health, was an event of the recently held Seventh Annual Congress on Industrial Health.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Bldg., Saint Paul, Minnesota

Julian F. DuDois, M.D., Secretary

Minneapolis Woman Sentenced to Three-year Term for Criminal Abortion

Re. State of Minnesota vs. Clara Olga Anderson, Irene E. McFarland and Isadore Abramovich.

On December 28, 1946, the Hon. Levi M. Hall, Judge of the District Court of Hennepin County, sentenced Clara Olga Anderson, forty-eight years of age, 1142 Emerson Avenue North, Minneapolis, to a term of three years at hard labor in the Woman's Reformatory at Shakopee. The defendant, Anderson, had pleaded guilty on that date to an information charging her with the crime of abortion, and also with having had a previous conviction for a similar offense in 1943. A plea by the defendant's attorney for a suspension of sentence and an opportunity for the defendant to leave the State, was denied by Judge Hall. On the same date Irene E. McFarland, forty-six years of age, 1514 Sixth Street North, Minneapolis, and Isadore Abramovich, twenty-four years of age, 706 Elwood Avenue North, Minneapolis, entered pleas of guilty to an information charging them with the crime of abortion in the same case with the defendant, Anderson. Judge Hall sentenced the defendant, McFarland, to a term of one year in the Minneapolis Woman's Detention Home, suspended the sentence and placed the defendant on probation. The defendant, Abramovich, was sentenced to a one-year term in the Minneapolis Workhouse, the sentence being suspended and the defendant placed on probation.

The three defendants were arrested on December 12, 1946, by Minneapolis police officers, following the admission of a twenty-three-year-old young woman to Minneapolis General Hospital suffering from the aftereffects of a criminal abortion. The investigation disclosed that the defendant, Anderson, attempted to abort the patient by means of a catheter, on December 10, 1946, at the home of the defendant, McFarland. The patient paid the defendant, Anderson, $150 for the criminal abortion of which sum $25.00 was given to the defendant, McFarland, for the use of her home while the abortion was being done. The defendant, Abramovich, employed as a "bouncer" at a Minneapolis bar, was arrested when it was disclosed that he was the contact man for the criminal abortion.

The defendant, Anderson, has a previous conviction for criminal abortion, having pleaded guilty in the District Court of Hennepin County, on March 25, 1943, to an indictment charging her with the crime of abortion. In that case Mrs. Anderson was sentenced to a term of not to exceed four years at Shakopee, but was placed on probation after serving one year in the Minneapolis Woman's Detention Home. None of the defendants has a license to practice any form of healing in the State of Minnesota.

GLOMUS TUMORS

(Continued from Page 160)

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Minneapolis Surgical Society

Stated Meeting Held November 7, 1946

The President, Thomas J. Kinsella, M.D., in the chair

POSTOPERATIVE ANURIA

Complicated by Duodenal Ulcer, Hemorrhage, Bilateral Pneumonia and Toxic Urticaria

L. A. STELTER, M.D.,
Minneapolis, Minnesota

The term oliguria, meaning deficient secretion of urine, and the word anuria, meaning scanty urine, may be used interchangeably, as they represent symptoms of some critical urinary disease. They represent the failure of the kidneys to excrete urine, and the longer the condition exists the more rapidly the state of uremia is approached.

The term uremia, introduced by Piory in 1848 to denote a state of intoxication due to resorption of urine, has now come to include all the toxic states which develop as a result of renal insufficiency. Uremia may be acute or chronic, the acute type arising from rapid suppression of urine; and the chronic type occuring from diseases which cause a slowly developing state of intoxication.

In 1821, Prevost and Dumas discovered that urea accumulated in the blood of a dog following removal of both kidneys. Bright, in 1836, knew that people suffering from nephritis had an increase in blood urea. According to Musser, severe intoxication may be manifest from 60 to 100 mg. per cent of urea; while in more chronic processes, where there is a gradual accumulation, mild symptoms may appear only after values higher than 100 mg. per cent. Values have been observed as high as 1,000 mg. per cent.

Creatinine values, normally 1 to 3 mg. per cent, may rise as high as 60 mg. per cent, but values above 5 mg. may have a serious prognosis, suggesting a fatal outcome. Recoveries have been recorded when creatinine has risen as high as 12 mg. per cent.

Rehberg and Holten calculated that 100 to 150 c.c. of fluid must filter through the glomeruli of the kidney per minute to accomplish the usual excretion of creatinine. Calculations were based on investigations of Vimtrup that the human kidney contains 2,000,000 glomeruli with a total surface of approximately 1.6 square meters. The effective pressure for filtration through the glomerular membrane is the difference between the glomeruli blood pressure and the force opposed by the osmotic pressure within the Bowman's capsule. If the number of glomeruli are reduced by disease, the filtration must necessarily be reduced. Similarly, fluctuations in the plasma protein have a direct effect upon the degree of filtration which is decreased if the protein content is increased.

Causes of Oliguria and Anuria

The causes of oliguria and anuria are numerous, and the most important may be listed as follows:

1. Kidney diseases in the terminal state; nephritis and nephrosis.
2. Toxic manifestations due to poisons, drugs, intravenous fluids or medications, and eclampsia.
3. Mechanical obstruction due to calculi, bilateral tumors including the ureters, surgical ligation of the ureters. Papin cited five cases of carcinoma of the rectum with anuria as the initial symptom. Nephroptosis has also been given as a mechanical cause.
4. Hysteria. Gordon reported a case of an hysterical woman with anuria which lasted two days and was cured by suggestion. Grenier saw an hysterical woman through five attacks of anuria lasting two, four, six, seven and fifteen days, respectively.
5. Surgical anuria resulting from shock, sympathetic trauma, and anuria from unknown cause following surgery.

Little has been written about this unfortunate disaster following a surgical procedure on the urinary tract or following a general surgical operation. Most authors stress the catastrophe as being due to varying blood pressure levels during an operative procedure or the result of blood transfusions (incompatible blood) in combating shock, where the blood pressure is definitely lowered and where a surgical procedure had been of long duration accompanied by fluctuating blood pressure.

Coller found that continuous inhalant anesthesia over long periods of time may affect the output of urine, but he was unable to find any evidence of either ether or cyclopropane causing any gross effect on glomeruli permeability.

Sturmia states that when incompatible blood is injected intravenously, rapid hemolysis occurs with the clinical symptoms of a chill, nausea, vomiting, lumbar pain, tightness and constriction of the chest, and elevated temperature following almost at once. There may be additional symptoms of abdominal pain, bladder pain and the urge to defecate. Transient hemoglobinuria with scant reddish brown urine appears, followed in a few hours by jaundice. The jaundice reaches its peak in twenty-four hours. The oliguria may improve and the patient may recover rapidly but more often it leads to uremia and death.

Sturmia lists as possible causes of oliguria (1) blockage of the renal tubules, (2) anaphylaxis, (3) ischemia of the kidneys from vasomotor constriction, and (4) nephrotoxic substances released by hemolysis. The first three he refutes but believes the fourth more feasible as there is a strong similarity pathologically between post-transfusion nephrosis and chemical nephropathies.

Dr. Stelter appeared on the program by invitation.

Bywaters showed in crushed muscle necrosis, causing shock, in the early blitz of London, that patients seemed to do well for several days, only to develop elevated blood pressure and die as a result of suppressed renal function. Two-thirds of the patients died at the end of the first week, the majority on the sixth day. About one-third of the cases recovered because urinary output was maintained.

Treatment

The treatment is chiefly preventive. Proper blood grouping and cross-matching are necessary before transfusions are given. It is well to establish alkaline diuresis by large doses of sodium bicarbonate by mouth until the urine is alkaline. The alkalinity should be maintained. If the patient is vomiting, a fresh solution of 1.4 per cent sodium bicarbonate may be given intravenously. Isotonic sodium lactate may be given intravenously. Fluid intake should be kept up to 2 to 3 liters a day, with sufficient saline to keep up the chloride level. If renal failure occurs, the treatment is identical; the addition of mercurial diuretics may be introduced, and decapsulation of the kidney considered.

Case Report

G. L., No. 1327311, aged thirty-six, white, an engineer by occupation, entered Fairview hospital at 2:00 P.M. on February 28, 1945, complaining of pain in the right lower abdomen and flank. He had become acutely ill at 2:00 A.M. and ascribed his illness to a few highballs and a heavy meal at a banquet the night before. During the night the pain became more intense, radiating down the right side and towards the back. There was nausea but no vomiting. He had no urinary disturbance, no nocturia, and no testicular pain, but felt some discomfort in the scrotum.

His past health had been good except for some indigestion; he had intolerance to fried and fatty foods and rare meats. Cabbage and oranges always gave him distress. For the past year or two, he had had some pain in the right side. Six months prior to the present illness he had a similar attack, at which time he went to another clinic where gastrointestinal, gall-bladder and colon studies revealed nothing abnormal. He was advised to have his appendix removed on the basis of a probable retrocecal location. This he refused to have done and returned to his home and work.

Physical examination revealed a robust, well-developed male, acutely ill. Except for the abdomen, physical examination revealed nothing abnormal. His pulse was 76, temperature 99.4° F.; blood pressure was 124 systolic and 75 diastolic, in millimeters of mercury. The contour of the abdomen was normal. The muscles were spastic. Palpation revealed no tumor nor masses, but the muscles of the right side were held rigid and he complained of tenderness in the right lower quadrant. There was also tenderness in the right lumbar region on Murphy percussion. There was no rebound tenderness and the testicles were not sensitive. The extremities and reflexes were normal. Rectal examination revealed nothing of note. A tentative diagnosis of acute appendicitis or some right-sided nephritic disease, ureteral stone or perinephritis, was made.

Laboratory tests showed a hemoglobin of 91 per cent. There were 11,900 white blood cells in each cubic millimeter of blood. Differential examination showed segmented neutrophiles 82 per cent, lymphocytes 16 per cent, monocytes 2 per cent. Urinalysis was normal except for two red cells and three pus cells in the high dry field. Specific gravity of the urine was 1.022. A scout film of the abdomen revealed nothing abnormal.

In spite of the above findings, I decided against surgical intervention, and on March 1, 1945, rechecked the laboratory procedures and found the urine normal except for four pus cells in a high dry field. The leukocyte and differential counts were normal. On March 2, 1945, an intravenous pyelogram revealed a marked hydronephrosis of the right kidney. The condition was discussed with the patient and he was advised to have a cystoscopic examination and a retrograde pyelogram made. He elected to have this done at a future date and returned to his home.

On March 7, 1945, he returned to Fairview hospital, and repeat laboratory examinations were within normal limits. On March 8, a cystoscopic examination was performed by Dr. R. T. Soderlind, who noted that "prostate, bladder and meatus were normal. Indocarmine appeared in normal time from the left meatus. No dye appeared from the right meatus although urine was spurting. A catheter was passed to the right pelvis and 50 c.c. of urine aspirated. A No. 6 catheter was left indwelling. A pyelogram revealed marked hydonephrosis of the right kidney."

Operation was advised and the patient was prepared for operation. His blood was grouped, matched and cross-matched for blood transfusions; fluids were forced, and sulfadiazine and sodium bicarbonate given. On March 11, an indwelling catheter was passed into the right ureter to reduce the size of the hydronephrosis. Urine from the right ureter showed three pus cells in a high dry field. No tubercle bacilli were found. The blood urea was 13 mg. per cent, creatinine 1.2 mg. per cent.

On March 14, 1945, the right kidney was removed under cyclopropane anesthesia. Operating time was one hour thirty-four minutes. Extensive adhesions and induration around the entire capsule made the procedure more difficult. The patient received 5 per cent glucose in normal saline intravenously during the operation. His pulse varied between 90 and 130 per minute, and his blood pressure from 100 systolic, 70 diastolic, to 154 systolic and 90 diastolic, in millimeters of mercury. He returned to his room in good condition.

Five hundred cubic centimeters of normal saline and 500 c.c. of citrated blood were given intravenously in the afternoon following the operation. He made satisfactory progress, and the blood pressure and pulse were normal. At 9:30 that night he was catheterized and 400 c.c. of urine obtained. At midnight he tolerated 1,000 c.c. of 5 per cent glucose in distilled water, and had a fair night. At 6:00 A.M., March 15, he complained of severe chest pain, generalized distress, dyspnea, and a faint feeling. His pulse became thready, weak and rapid; the rate rose to 150 per minute. The blood pressure was 80 systolic and the diastolic could not be heard. He was given neosynephrin, 250 c.c. of plasma intravenously, 500 c.c. of normal saline, and 500 c.c. of citrated blood, after which he rallied from shock and his blood pressure rose to 110 systolic and 70 diastolic, and his pulse stabilized at about 110. At 9:30 A.M., March 15, he was catheterized and 5 c.c. of urine obtained. In the afternoon the patient became confused and irrational, but this was only transitory. An indwelling catheter was inserted in the bladder and 5 c.c. of urine obtained. Penicillin, 20,000 units, was given every three hours. One thousand cubic centimeters of 5 per cent glucose in normal saline and 1,000 cubic centimeters of 5 per cent glucose in distilled water were given intravenously morning and afternoon. Copious fluids were given by mouth, with large doses of alkalies, in an effort to establish diuresis. On March 16, nasal suction was instituted because of abdominal distension. On March 17, the condition of the patient was unchanged. The wound was inspected and the drains removed. In spite of the large fluid intake and the elevated metabolites, the condition of the patient remained fairly good. He showed no gross evidence of uremia. His skin, however, became deeply bronzed and jaundiced, reaching its height on the fourth day. On March 18, Dr. Soderlind passed a catheter into the left ureter and also left a Foley catheter in the bladder. Supportive treatment and forced fluid intake were continued. When the nasal suction could be clamped off, alkalies were given in large amounts. In the evening the patient began to doze a great deal; in waking intervals he became very restless and irritable. His blood pressure rose gradually up to 180 systolic and 78 diastolic. His pulse slowed.

On March 19, Dr. Theodore Sweetser saw the patient in consultation and recommended increase in fluid intake, hot packs and diathermy over the left kidney. Decapsulation was suggested if the urine did not increase in amount. On March 20, at about 8:30 A.M., he became very restless and irritable. He was put in restraints, and he thrashed about. At 8:45 he had a convulsion of several minutes' duration, which, according to the nurse, occurred after he lapsed into deep coma. Dr. Sweetser advised decapsulation of the left kidney under local and gas anesthesia.

The capsule of the left kidney was stripped completely, anteriorly and posteriorly, the poles explored and found normal, and the wound closed rapidly. He stood this operation surprisingly well. In his room, saline and another transfusion were started. At 4:30 P.M., the ureteral catheter began to drip and by 7:45, about 50 c.c. of urine had been collected. At 11:45 P.M., 100 c.c. more had been excreted. However, the patient's condition was critical and he was placed under an oxygen tent, which he constantly attempted to tear off. His twitching and muscular jerkings were controlled by sodium luminal.

His general condition from now on showed a gradual improvement, though he remained unconscious. The right wound was torn open by positioning on the operating table. By March 23, he was removed from the oxygen tent. On March 25, he developed a very harsh cough, elevated temperature and expectoration. X-rays of his chest revealed nothing noteworthy. His cough subsided and he again seemed to improve.

On March 27, following a hard coughing spell, during which time he raised a great deal of thick purulent mucus, he had a defecation of black stool, found to be blood. On account of repeated positive findings of blood in the stool, a diagnosis was made of bleeding duodenal ulcer and he was treated by the Cook County bleeding ulcer regime. He was kept on the diet, given creamalin, vitamin K, thiamin chloride, vitamin C, liver extract, and repeated blood transfusions, to which he responded well.

He continued to improve, and on April 24, the wound of the right side was completely debrided and closed with interrupted silk sutures. It now healed readily, and on May 1 he was allowed to sit up. At 11:30 A.M. on May 2 the patient developed dyspnea and pain in his left chest. His symptoms simulated those of a pulmonary embolism and for a while it was feared he would expire. X-rays on May 6, following a similar attack in the right chest, revealed pneumonia on both sides. He again responded to penicillin and an oxygen tent, and roentgenograms on May 9 showed the pneumonia to be subsiding on the left side. On May 13, when he seemed well on his way to recovery, giant urticaria developed over his entire body. Penicillin was discontinued and the urticaria responded to epinephrine. On May 15, the patient was allowed out of bed while all attendants held their breath for fear of another catastrophe. On May 19, he left the hospital in ambulatory condition.

The surgical specimen showed a large kidney with multiple abscesses, massive suppuration and liquefaction. The infection was nontubercular. The diagnosis was multiple carbuncles of the kidney.

Stomach x-ray studies on July 7, 1945, by Dr. J. Kelby, verified the diagnosis of duodenal ulcer.

The patient's health to date has been good. A recent examination revealed normal blood and urinary findings, and his last weight was 197 pounds.

Comment

It is my opinion that this patient had a postoperative anuria resulting from a transfusion reaction, the reaction occurring about fourteen hours after the transfusion. This delay I cannot explain. Ordinary routine care, based on the treatment of uremia, failed to alter the picture. Uremic convulsions ensued and, as a last resort, decapsulation was done. It is possible that splitting the capsule and manipulating the kidney decompressed the glomeruli sufficiently to permit the excretion of urine. A biopsy of the kidney would have given valuable information. The numerous complications of wound disruption, bilateral pneumonia, bleeding duodenal ulcer, and urticaria were coincidental to the illness, and only added to the patient's discomfort and the attendants' grief.

Discussion

DR. CLARENCE DENNIS: I have nothing to contribute, but I would like to ask a question for my own information. There is evidence to believe that alkalinzing urine does not have any benefit in preventing renal damage. I am curious.

DR. L. A. STELTER: Alkalinization has been suggested in the literature to help prevent reactions in blood transfusions.

DR. EDMUND FLINK: There are a few comments which I would like to make regarding the problem of reaction of the urine in relation to renal damage from hemoglobinuria. I carried out some experiments, causing hemoglobin solution in dogs which had a strongly acid urine and in dogs which had alkaline urine, and obtained renal biopsy thereafter. Renal damage with uremia resulted whether the urine was acid or alkaline. The number of dogs was not great. At the time when the urine was strongly alkaline as well as when the urine was acid, hemoglobin precipitated in the tubules, toxic changes occurred, and one couldn't distinguish the kidneys of the dogs that had acid and alkaline urine. The dogs which developed renal damage had the highest plasma hemoglobin levels, regardless of urine reaction. No renal damage developed when relatively lower hemoglobin levels were found.

One bit of evidence is presented in black water fever which results in anuria in quite a number of cases. The mortality rate in a large series of patients whose urine was alkalinized as soon as hemoglobin appeared in the urine is the same as in an even longer series of patients to whom alkalies were not given.

There has been recent work which would support the idea that alkalinization has benefit. Yulie has clamped both renal arteries in rabbits for fifteen to twenty minutes and injected small amounts of hemoglobin solution. The animals that had alkaline urine suffered no kidney damage at all, and those that had acid urine had severe kidney damage, similar to transfusion reaction kidneys. His idea was based on the fact that transfusion reaction is often accompanied by shock-like state, renal anoxia, et cetera, and he was trying to simulate that condition. Thus, there may be some evidence that alkalinization is of use. The original basis of alkalinization was on rather flimsy ground. The work of Baker and Dodds, who used very few rabbits for their experiments, gives very little pertinent data and their conclusions are not convincing. DeGowin, who carried out a large number of experiments on dogs, still left the question open. I don't know what the answer is. If one is going to accomplish anything, however, alkalinization before transfusion, or at least immediately after demonstrating a hemolytic reaction, should be carried out promptly. One must be certain the urine becomes alkaline too. A great deal of harm can result from the indiscriminate administration of a large volume of alkali to a patient with anuria or oliguria. I am quite certain that attempts to alkalinize the urine once anuria has developed will not be of the slightest value and may be harmful.

There are several other ideas. Those patients received sulfadiazine at the time of anuria. Sulfadiazine possibly contributed to kidney damage. Another thing, whenever one has a transfusion reaction, it is well to find out immediately whether or not there is a hemolytic reaction. One easy way is to obtain a specimen of plasma or serum immediately. If the serum or plasma is obtained carefully, there will be no hemoglobin visible normally, but if there has been a hemolytic reaction, there will always be hemoglobin present in sufficient quantity to color the plasma red. Normal appearing plasma or serum will ease one's mind that a febrile reaction is not a hemolytic reaction. On the other hand, absolutely essential information will be obtained when a true hemolytic reaction has occurred.

THE USE OF CHEMICAL AGENTS IN THE TREATMENT OF HYPERTHYROIDISM

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In May of 1943, E. B. Astwood of Boston[1] published a report on the reduction of basal metabolic rate and the abolition of signs and symptoms of hyperthyroidism in three patients using thiourea and thiouracil by mouth.

In 1941, MacKenzie, MacKenzie and McCollum[12] reported a remarkable enlargement of the thyroid in animals which had been fed sulfaguanidine. Two simultaneously published studies by MacKenzie and MacKenzie[11] and Astwood, Sullivan, Bissell and Tyslowitz[4] made clear the unique nature of the new goitrogenic agents of which sulfaguanidine is the prototype and thiouracil the best known example.

The goiters produced by these agents, unlike those produced by the older goitrogens,[10,15,17] viz. soy beans, thiocyanate, cabbage and seeds of the Brassica family, generally cannot be prevented or abolished by iodine administration. The currently accepted view[3,11,14] of the action of thiouracil, as characteristic of the new thyroid drugs, is that it inhibits the uptake of iodine and the formation of thyroid hormone by the thyroid gland,[3,8,14,16] colloid typically being reduced or depleted,[4,11] and basal metabolic rate falling. In the presence of normal thyroid function, the pituitary is believed to overact, producing hyperemia and epithelial hyperplasia of the thyroid; this explanation of the thyroid hyperplasia is based upon (1) the known action of the thyrotropic hormone of the pituitary, (2) observable histologic changes in the pituitary following sulfaguanidine administration, (3) the ability of administered thyroxin to prevent or abolish thiouracil-induced hyperplasia of the thyroid, (4) the absence of thyroid hyperplasia in hypophysectomized animals given the new goitrogens.[4,11]

Thiouracil (2-thiouracil)[2] was found to be the most potent of the earlier substances tested. More recently, ethyl and N-propylthiouracil have been found to be more active than thiouracil. Thiourea, thiobarbital, and various substituted ureas are active agents also.

More than 5,000 patients have been treated with thiouracil since 1943. We have had experience treating approximately sixty-five patients with thiouracil at the University Hospital. Most of the patients were treated as a preoperative measure. Six patients, however, were maintained for long periods on thiouracil. Two patients have been lost from sight since discontinuing the drug. One adolescent girl has been able to stop the medication without recurrence of symptoms. Two adults have repeatedly demonstrated that there is prompt return of symptoms after discontinuing thiouracil, even eighteen or more months from the time of starting therapy.

The speed of response as measured by the basal metabolic rate, by weight gain, et cetera, has compared favorably to that obtained by other investigators. The basal metabolic rate dropped to +20 per cent in from four to eight weeks. Patients who had iodine before starting thiouracil responded more slowly than those who had not had iodine previously. Most of the patients had moderately severe to severe hyperthyroidism.

Failure to control symptoms adequately has occurred in three cases even after continued administration for as long as three months. Perhaps longer trial would have been successful, but thyroidectomy was carried out in each instance, successfully in two but resulting in death shortly after operation in one. All had had iodine for varying periods before thiouracil therapy, with very poor results and obviously were resistant to further action of iodine. They had large nodular goiters, had basal metabolic rates over +50 per cent, and had at least some cardiac disability. Two were diabetics.

When the patients were in an approximately normal state of metabolism, thyroidectomy was usually carried out without event. In several instances thyroidectomy presented some technical difficulties. When the basal metabolic rate was normal before operation, the postoperative convalescence was as uneventful as after operations on a nontoxic goiter. The routine use of iodine for several weeks before contemplated operation has decreased the technical difficulties appreciably.

The largest single group of patients treated for a prolonged time is that of Williams.[20] One hundred patients were followed for a period of many months. Forty-nine patients have had remissions lasting from three to twenty-one months, and fifty-one have had relapses in from two weeks to five months (most of them in one month). X-ray therapy, coincident thyroid administration, type of hyperthyroidism and severity of the hyperthyroidism had no significant effect on the percentage of relapses. Males tended to have many more relapses than females (fifteen out of nineteen males). Patients with large glands tended to relapse more frequently than others.

The most important consideration of all is the frequency and severity of toxic reactions. The largest collected series analyzed the records of 5,745 treated patients.[18] Thirteen per cent had some toxic reactions. Granulocytopenia occurred in 2.5 per cent of cases, and 80 per cent of these occurred by the twelfth week. A mortality rate of 0.4 per cent has been reported and all deaths have been attributed to agranulocytosis. There is no evidence that folic acid, pyridoxine or any vitamin influences the course or prevents the complication. By controlling infection, penicillin appears to be the best therapeutic agent for agranulocytosis. Other important toxic reactions include fever, rash, arthralgia, delirium, purpura, salivary gland enlargement, neuritis, headache, and jaundice. Reports of smaller series of cases have indicated an incidence of 10 to 16 per cent toxicity.[13]

The recommended dose is from 0.4 to 0.6 gm. per day in divided doses until the basal metabolic rate approaches normal, after which the dose can be reduced to 0.1 to 0.4 gm per day. It is well to administer iodine in full doses for ten to fourteen days before contemplated surgery. If iodine has been administered within a month, it is not advisable to stop iodine during the course of treatment.

Because of serious toxic reactions, thiouracil probably should be used only in patients who have one of the following conditions: (1) thyrotoxic heart disease with or without auricular fibrillation, (2) organic heart disease complicated by coincident hyperthyroidism, (3) severe hyperthyroidism treated with iodine for a variable period without adequate response, and (4) patients refusing surgery or other treatment. Careful follow-up must be possible. Leukocyte counts three times a week, frequent check for fever, skin rashes, other symptoms, and observations of the bleeding mechanism must be made. After several months vigilance can be relaxed somewhat but leukocyte counts should be determined every week then.

Danowski, Man and Winkler[7] have recommended the use of small doses of thiourea along with iodine as a form of maintenance therapy in hyperthyroidism. They have treated fifty-four cases successfully. Two patients developed fever shortly after starting thiourea. The dose used ranged from 0.07 gm. to 0.28 gm. of thiourea and 15 drops of strong solution of iodine a day. The response was more prompt in almost every case than in the usual experience with thiourea or thiouracil alone.

N-propyl thiouracil is a recent addition to the group of goitrogenic drugs. In animals it is effective in 1/6 to 1/10 of the dose of thiouracil. Astwood[5] reported the treatment of thirty-five patients without any toxic effects. Now over 600 cases have been treated but there are instances of drug fever, leukopenia, skin rashes and other similar complications. Doctors Bieter and Troxil of the Department of Pharmacology have been supervising its use here at the University of Minnesota. Fifteen cases have been treated. Two patients developed fever and leukopenia (and one a severe rash also). Propyl thiouracil may not have been the cause in either case. One patient developed a severe rash and fever from phenobarbital. Satisfactory response has occurred in eleven cases, no response in one case and toxic reactions in two cases. The period of observation was too short in one. The responses have been comparable to the ones observed when thiouracil is administered. Propyl thiouracil has been administered in doses of 75 mg. per day, but more recently up to 200 mg. have been recommended. It appears to have definite advantages over thiouracil but still is not without dangerous toxic complications.

The use of radiation therapy in hyperthyroidism is well known. It is effective in a fairly high percentage of cases. The idea of the use of "internal radiation," using various radioactive isotopes of iodine, has been current for about ten years, but the unavailability of radioactive iodine and various other factors have limited its application.

Hertz and Roberts[9] reported the results of treatment of twenty-nine patients with radioactive iodine, and Chapman and Evans[6] reported the treatment of twenty-two additional patients. Both groups used I^{130} (with a small amount of I^{131}). I^{130} has a half life of twelve hours, and I^{131} has a half life of eight days. Both substances emit beta rays in the process of decomposition. The calculation of dose of isotope used depended on the following data: (1) fractional uptake of radioactive iodine by the thyroid, (2) the known energy of the radiations from I^{130} and $I,^{131}$ (3) the clinical estimation of the weight of the thyroid of the patient, and (4) the known pattern of uptake and retention of radioactive iodine by hyperplastic thyroid gland of hyperthyroidism.

Hertz and Roberts[9] used from 1.5 to 28 m.c. of I^{130} giving an estimated 500 to 2,500 roentgens (plus or minus 50 per cent) to the thyroid. Of twenty-eight patients whom they felt had received adequate dosage (questioned by Evans and Chapman[6], five patients underwent subtotal thyroidectomy partly as a means to evaluate therapy. Twenty patients are not thyrotoxic, and three patients must be considered failures, three or more years after therapy. Every patient who had a subtotal thyroidectomy developed myxedema or hypometabolism, indicating continued progress of involution after the thyroidectomy.

Chapman and Evans[6] used much larger doses—from 0.5 to 1.2 m.c. per gm. of estimated thyroid weight. In a series of twenty-two patients so treated, twenty are either nontoxic or myxedematous, and only two failed to show a return to normal metabolic state. The decline in basal metabolic rate to normal occurred over an average period of sixty days. Five patients had multiple doses. It is apparent that this last series of cases from the Massachusetts General Hospital responded more promptly and completely than those of Hertz and Roberts.

In order to carry out such therapy adequately, it is imperative that a competent physicist be able to follow the treatment, measuring carefully the amount excreted, the calculation of dose, et cetera.

One patient has been treated with I^{131} (half-life of eight days) at the University Hospital. Doctor Stenstrom and the staff of his laboratory have carried out the necessary calculations of dosage, excretion, and uptake by the gland, in terms of roentgen equivalents. The patient is a twenty-nine-year-old woman with very severe hyperthyroidism of about six months' duration.

Her basal metabolic rate at time of hospital admission, after taking iodine for three weeks, was +65 per cent. Her condition has been precarious. Propyl thiouracil was started, but a generalized skin eruption, leukopenia and fever developed shortly afterward. This actually proved to be due to phenobarbital rather than propyl thiouracil. Too short a time has elapsed since giving the radio-iodine to determine what the response will be, but she has improved quite definitely now.

Conclusions

The mode of action, effectiveness, dangers and indications of the thiouracil group of drugs have been reviewed. These agents have added a great deal to our understanding of the physiology of the thyroid gland and have proved to be of very real value in the control of hyperthyroidism. The thiouracil compounds do not supplant thyroidectomy, but merely supplement it at the present time.

Radioactive iodine gives promise of being an important tool in the medical therapy of hyperthyroidism. Since its use depends on fairly elaborate equipment and a thorough knowledge of physics, for the present only a few clinics and hospitals are able to use radioactive materials.

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EXTERIORIZATION PROCEDURES FOR COLON INJURIES

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In addition to well-established principles which are followed in the management of intra-abdominal trauma, exteriorization procedures for large bowel injuries have been found extremely valuable. For the purpose of discussion, exteriorization procedures may be considered to include not only the actual exteriorization of the damaged segment of bowel but also colostomies formed proximal to the site of injury in a part of bowel which cannot be brought outside the abdominal cavity. However, it is important to note the distinction between exteriorization of a wounded segment of bowel and the construction of a colostomy for the purpose of defunctionalizing the distal segment. At times both purposes may be accomplished by one and the same procedure, but a clear understanding of the purpose of the operation is necessary to the selection of the techniques involved.

While stationed at army general hospitals, one in this country, and one overseas, the author became impressed with the usefulness of exteriorization, when about fifty patients with colostomies which had been made in the treatment of battle injuries of the colon and rectum at overseas army medical installations came under his care. The management of these colostomy patients and a partial review of the literature constitute the basis of this paper. The author has had no experience with the initial treatment of battle injuries in the forward areas. It is, therefore, with understanding and realization of the difficulties encountered by surgeons in the front line regions, and the knowledge that hindsight is easier than foresight, that certain critical observations are made.

The wisdom of exteriorization of wounds of the colon was emphasized repeatedly during the late war. Ogilvie,[9] in reviewing the results of surgery in the western desert, contended that the principle of exclusion of all damaged parts of the large intestine until repair is complete, applies to all injuries, even suspected ones, and to all parts of the bowel, particularly the extraperitoneal portion of the rectum. From directives and bulletins issued by the Surgeon General's Office, in which broad policies and guiding principles on the care of the wounded were presented, it can be learned that exteriorization of the injured bowel was considered the established procedure. Proximal colosotomy was regarded as mandatory in the treatment of wounds of the rectum. Primary closure of wounds of the unprepared colon, as found in battle casualties, was deemed unwise and unsafe.

Ogilvie[9] cited a case which is illustrative. Primary suture of a retroperitoneal tear of the descending colon, with drainage of the retroperitoneal region, was accomplished. Later a fecal fistula developed, and the patient died on the ninth day. Autopsy showed the wound of the colon to be broken down over a large area. Fecal matter lay free in the retroperitoneal tissues, and a severe general peritonitis was present. Comment by the surgeon was: "Suture alone seemed adequate; a proximal colostomy should have been made."

The following case, which was among those observed by the author, also serves to illustrate the probable unwise choice of primary suture of a perforated colon rather than exteriorization.

The patient incurred a gunshot wound of the abdomen with the point of entrance in the right lumbar region and the point of exit in the left lower quadrant of the abdomen. At laparatomy ten hours after injury, a perforation 3 centimeters in diameter was found in the upper portion of the sigmoid colon. The perforation was closed. On arrival at an overseas general hospital, a fecal fistula was present in the lower left quadrant of the abdomen. The external opening of the fistula was the original wound of exit. At this hospital a loop colostomy of the transverse colon was made and multiple bone fragments were removed from the left ilium. After admission to a general hospital in this country, it was found that the patient had the following conditions: a fecal fistula, a poorly functioning loop colostomy of the transverse colon, compound comminuted fractures of the left ilium and sacrum with osteomyelitis of these bones, an atonic bladder, anal sphincter incompetence and partial paralysis of the left lower extremity. It was determined by x-ray examination, after lipiodal injection, that the fistula communicated with the upper sigmoid colon. Since the loop colostomy did not completely divert the fecal stream and therefore did not defunctionalize the distal bowel, revision of the transverse colostomy with separation of the stomata was done. Later, the perforated portion of the sigmoid colon and the fecal fistula were excised, and end-to-end anastomosis accomplished. The chronic osteomyelitis required drainage and sequestrectomy. The transverse colostomy was permitted to remain because of the incompetent anal sphincters. It is believed that exteriorization of the perforated portion of the sigmoid colon and the formation of a double-barrel colostomy at the time of the first laparotomy would have been the better procedure for this patient. Exteriorization would have prevented the formation of the fecal fistula and might well have lessened the severity of the osteomyelitis.

In reviewing the literature, it was found that authors who had had first-hand experience with battle injuries were almost without exception in favor of some type of exteriorization of all battle injuries of the colon. Horsley[6] stated that there is no dispute concerning exteriorization of the wounded bowel. Mason[8] followed the dictum, "exteriorize all colon injuries." Such strict adherence to the principle of exterioration of all colon injuries may be debatable in civilian-type injuries. Hoffert reported at this society two cases of civilian-type injury to the colon in which exteriorization was employed with successful results in both cases.

Although there appears to be little or no argument concerning the value of exteriorization of battle injuries of the colon, there is considerable controversy over the methods of accomplishing the exteriorization, such as the technique involved and the type of colostomy to be employed. It is believed by some surgeons that the simple tube or loop colostomy, when properly performed, will completely shunt the fecal stream and defunctionalize the distal segment, while it is considered by others that the loop colostomy is inefficient and that complete defunctionalization of the distal bowel can only be obtained by forming a colostomy with separated stomata. It is felt by the latter that fecal material is bound to get into the distal bowel if the colostomy is covered by the same dressing. In observing the colostomies of those patients which came under the author's management, it did not seem that there was always a clear understanding of the purpose of the operation at the time the colostomy was made. This was particularly true of proximal colostomies whose apparent intended purpose was to defunctionalize the distal bowel but, because of the technique used, could at best only decompress the bowel. Many of these patients arrived at the general hospital with the distal colon and rectum filled with feces. This was especially troublesome in those patients suffering from wounds of the buttocks and perineum which communicated with the rectum and which frequently were associated with compound fractures of the pelvic bones.

In order that a better understanding of the purpose of the operation can be acquired, Mason[8] has grouped trauma of the colon as follows: (1) perforations of the antemesenteric portion up to one-half the diameter of segment; (2) perforations of the mesenteric and antemesenteric border larger than one-half of the diameter; (3) severely torn segments necessitating resection of a segment; (4) complete transections; (5) injuries to the mesentery producing nonviable segments; (6) the first five groups occurring in the rectosigmoid above the pelvic floor; (7) the same five groups occurring between the pelvic peritoneum and anus; and (8) injuries necessitating right colectomy or cecectomy. Using a classification of this type, the exteriorization of the bowel should be planned and the colostomy constructed, bearing in mind not only the simplest and easiest closure later but, what is more important, the real purpose of the exteriorization.

Ordinarily two types of colostomies are employed: (1) the tangential, simple, no-spur loop or tube colostomy and (2) the long, double-barrel colostomy with or without separation of the stomach. According to Mason,[8] injuries of the colon fall in groups as stated above; and Groups 1, 6, and 7 should be treated by the simple, no-spur, loop colostomy. There is no question concerning the Group 1 injuries, since a loop colostomy will handle adequately the small antemesenteric or lateral perforations and lacerations. One questions that a loop colostomy, no matter how performed, will completely defunctionalize the lower bowel and rectum in Groups 6 and 7 injuries. It is believed that the time would be well spent, providing the patient's condition permits, in constructing a colostomy which will completely defunctionalize the lower segment. This can only be accomplished by the formation of a colostomy with separated stomata, whether this be the Devine type or a no-spur colostomy with separated stomata necessitating end-to-end closure later. The usual double-barrel colostomy with approximated stomata will permit feces to gravitate from the proximal stoma to the distal stoma. Exclusion-type colostomies should be constructed, particularly for large intraperitoneal perforations or lacerations of rectum, where it is obvious a long time will elapse before healing and where secondary closure of the rectal wound will be necessary. Extensive damage to lower bowel segments, associated injury of bladder and urethra, and rectal injuries with compound fractures of the pelvis are examples of injuries which require a prolonged and complete defunctioning artificial anus. Under these circumstances, the exteriorized loops should be made sufficiently long to allow for complete transverse section and some separation of the stomata. As ultimate closure will be by end-to-end suture, the formation of a spur is undesirable. The formation of a skin bridge between the arms of the loops might, in fact, be preferable.

The loop colostomy may be used for small perforations of the rectosigmoid, suspected perforations of the rectum, or when the patient's condition is such that the additional time required to construct a completely diverting type would greatly add to the risk of the operation. However, certain details in the formation of the loop colostomy, as recommended by Horsley,[6] Mason[8] and Fallis,[3] should be observed. For exteriorizations or loop colostomies in the lower quadrants of the abdomen, short, laterally placed incisions which follow the direction of the fibres of the external oblique, similar to the McBurney incision, should be used. For colostomy of the transverse colon, a transverse incision through either rectus muscle, as advocated by Fallis,[3] is indicated. The transverse incision will obviate the necessity of rotating the loops or twisting the bowel in its axis to permit delivery. Adequate mobilization without tension is extremely important in preventing retraction. It should be recalled that about one-half the diameter of the right colon, both flexures, and a portion of the rectosigmoid lie retroperitoneally, and that the lateral mesenteric attachments are for the most part avascular. Lateral incisions in the mesocolon can be made with impunity in procuring mobilization. Even with adequate mobilization there is a tendency for loop colostomies to retract. For this reason, a glass rod or rubber tube should be placed under the loop to be maintained in place for several weeks if necessary. Retraction causes the colostomy to degenerate into a useless fistula, which may be difficult to repair or may lead to intraperitoneal sepsis or abdominal wall abscess. The loop colostomy should be opened as soon as it is made, in the long axis of the antemesenteric border of the bowel, not necessarily in a longitudinal band. About two-thirds of the incision should be over the proximal loop and one-third toward the distal loop. The mesenteric border of the bowel will be undisturbed and will rest against the glass rod or tube. Often this type of colostomy can simply be closed by suturing the longitudinal incision transversely. The closed loop can then be placed extraperitoneally or intraperitoneally as seems most desirable.

Injuries of the colon falling in Groups 2, 3, 4 and 5 of Mason's[8] classification should be treated by the construction of a double-barrel spur colostomy, according to Mason. This type of colostomy and exteriorization would permit extraperitoneal closure after crushing the spur. It was Mason's belief that exteriorization of these injuries without formation of a spur would result in a complicated procedure in re-establishment of the continuity of the bowel. This is contrary to the opinions of Keene[7] and Hamilton and Cattanach,[4] who prefer excision of the colostomy and end-to-end intraperitoneal closure as a one-stage procedure rather than the spur-crushing, extraperitoneal two-stage procedure. The author has, on several occasions, closed colostomies intraperitoneally with excellent results and no untoward effects. As has been emphasized by Coller and Vaughn,[3] Pemberton and Black,[10] the peritoneal cavity will stand the contamination of intraperitoneal closure of a colostomy or open end-to-end anastomosis better than the abdominal wall tissues at the site of the colostomy.

Injuries of the ascending colon and cecum are extremely difficult to manage. Various exteriorizations procedures have been recommended. Tangential perforation of the cecum may be treated by tube cecostomy but preferably by exteriorization. Cecostomy, even when necessary because of direct injury, should never be used as a substitute for a proximal colostomy when indications are present for the latter. Extensive injuries necessitating resection of the cecum and ascending colon were treated by a number of different methods. In one method, after resection, a terminal ileostomy was created in a separate incision in the right lower quadrant, and the distal end of the colon was exteriorized below the costal margin. Occasionally an ileocolostomy was done and the distal end of the colon exteriorized as a colostomy. The formation of a double-barrel colostomy, one limb of which is the distal colon and the other limb the terminal ileum, has been suggested as another way of handling these injuries.[1] Such a combined proximated ileostomy and colostomy could be closed extraperitoneally after crushing the spur.

It would seem a simple matter to close a colostomy. However, the fairly large number of papers written on the closure of colostomies by authors with large experience attests to the fact that difficulties are encountered. It was the author's experience to find that a large number of colostomies were attended with complications or problems such as retractions, herniation of the bowel subcutaneously, interposed foreign bowel or mesentery between the colostomy loops, varying degrees of rotation of one limb of the colostomy around the other limb, secondary perforations or fistulae adjacent to the colostomy, and inflammatory or granulomatous masses involving the colostomy. These complications prohibited or precluded the use of the Paul-Miculicz technique or spur-crushing extraperitoneal closure. Excision of the colostomy, followed by intraperitoneal, open or closed, end-to-end anastomosis, was accomplished in these cases, with excellent results. Where a well-defined spur is present, the usual spur-crushing extraperitoneal closure can be used. Whatever method of closure is used, the contamination of the abdominal wall tissues should be handled either by delayed closure, as used by Coller and Vaughn[3] and Pemberton and Black,[10] or by subcutaneous drainage.

Summary

The value of exteriorization procedures for colon injuries is emphasized.

The techniques involved and the indications for the various methods of exteriorization are discussed.

When the intended purpose of the exteriorization procedure is defunctionalization of the distal bowel it is believed that a formal type of colostomy with separated stomata should be made, rather than a simple loop colostomy.

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Discussion

Dr. Robert J. Tenner: Dr. Anderson has presented a very interesting and excellent discussion of the problem of colostomy and exteriorization procedures for colon injuries.

I would like to emphasize the importance of an exclusion type of colostomy. My experience in an Army General Hospital was very similar to Dr. Anderson's, and I saw several cases of chronic fecal fistulas which I believe would have been prevented if the colostomies which were established had completely diverted the fecal stream.

When it is deemed advisable to make a colostomy, whether for decompression in the case of an obstructing carcinomatous lesion or for protection of the sutured colon after repair of an injury, I feel the fecal stream should be diverted completely. I have seen colostomies which only partially diverted the fecal current, and I believe these were so constructed, in part at least, to facilitate the later closure of the bowel in a retroperitoneal or so-called aseptic manner. This aid to later closure of the stoma is no longer necessary, in my opinion, in that with the aid of chemotherapy plus the immunity present in these cases there is little or no risk or danger to the procedure of colostomy closure. At our hospital we closed over fifty colostomies. These closure cases were prepared for five days preoperatively with 15 to 20 gm. of sulfasuccidine daily, and then the stoma was closed and the wound sutured in layers. In some instances an extraperitoneal closure was done, but more often the colon was put back into the peritoneal cavity, free on its mesentery. All cases healed well and with no further difficulty. Therefore, I feel it is important to establish a completely exclusion type of colostomy in order to accomplish the main purpose at hand, in those cases where for any reason a colostomy is indicated.

There is a point I would like to mention in connection with the construction of a transverse colostomy when such a procedure is indicated. I feel it is advisable to make use of the protective properties of the omentum in these cases. An opening should be made in the omentum distal to its attachment to the transverse colon and by reaching through this opening, a loop of the colon can be delivered which will be surrounded by a collar of omentum. After the colon has been exteriorized and the wound closed, the omentum is in direct contact with the peritoneum of the anterior abdominal wall and thus seals off the peritoneal cavity from contamination and protects against possible herniation of the small intestine through the wound. Also when the colonic stoma is later closed, the omentum affords excellent protection against possible leakage which might occur at the suture line.

Dr. Hamlin Mattson: Colon injuries constituted 22 per cent of all intra-abdominal visceral injuries in World War I. At Wakeman Hospital Center, most of our colon surgery consisted in closing colostomies made overseas. We saw loop colostomies. I do not recall seeing one with separated stomata. We did end-to-end sutures and dropped the colon back into the peritoneal cavity. By this method better repair of the fascial hiatus is possible. The peritoneum is much better able to cope with infection than is the abdominal wall. The abdominal wall was drained. With chemotherapy and suction tubes in the lower small bowel, we are permitted greater boldness in colon surgery than heretofore.

We saw posterior colonic fistulas from bullet wounds through the ascending and sometimes descending colon where no mesentery is present. In the former it seemed best to do right hemicolectomy, while in fistulas from the descending colon the preferable procedure seemed to be repair of the colon after rotation, followed by a temporary transverse colostomy, Devine type.

Dr. Nathan C. Plimpton: I was very much interested in Dr. Anderson's paper and the comments. These men were at one end of the line while I was at the other. We often wondered what happened to the men we operated on, and my only follow-ups were a few scattered letters from some of my patients.

It is evident from what was presented here tonight that some colon injuries would have been better treated by an exclusion type of colostomy. In the European Theater of Operations, by directive, we did loop colostomies, and I think it is a good operation for most of the cases it was done on. Our group was about evenly divided between repairing the injuries to the colon and doing a proximal colostomy, and by exteriorizing the injured segment. I used to prefer the former when possible because I could delay the opening of the colostomy a day or so, thereby saving the wound from some contamination. Also, I preferred bringing my colostomies through a separate wound, usually a transverse incision when a transverse colostomy was done. One trick we employed when there was a single hole in the colon was to exteriorize that particular part of the bowel and repair it, with the hope that it would hold. Of course, it never did, but the wound was spared several days contamination. It was our feeling at the time these colostomies were done that, because the distal loop of the colon was already full of feces, it would not make much difference if there was some drainage from the proximal loop into the distal loop as long as we had performed a decompression.

Another argument for this procedure is that it is quick and simple, which is quite a factor when there is a backlog of ten to fifteen men in the preoperative tent who need abdominal and chest operations. I quite agree that all retroperitoneal wounds of the colon should be drained directly to the outside, in addition to the proximal colostomies. One thing we learned was that in the rather severe wounds of the rectum it is better to do a proximal transverse rather than a sigmoid colostomy, because in the final repair it might be necessary to mobilize enough sigmoid to anastomose it with the lower rectum, and if the latter procedure is done, it would add to the difficulty of the final operation.

Dr. U. S. Anderson: Before this meeting, I tried to find someone who had served in a field or evacuation hospital to tell of his experiences in making these colostomies. I was unable to find anyone, and I am therefore glad that Dr. Plimpton has told us something about his experiences. All of us who were in general hospitals, both in this country and overseas, marveled at the excellent work of the surgeons in the field and evacuation hospitals. I did not wish to give the impression that all of the colostomies were made incorrectly. Many of them were made correctly, subsequently closed and the patients returned to duty. As I stated in my paper, I had had no first-hand experience with battle casualties, but believe I could understand and appreciate the many difficulties under which the surgeons in the forward areas worked.

◆ Reports and Announcements ◆

MEDICAL BROADCAST FOR FEBRUARY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Service Association in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association, and the University of Minnesota School of the Air.

1	11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
4	4:45 P.M.	WCCO	Hospitals for Mental Disease
5	11:00 A.M.	KUOM	Your Body Needs Regular Exercise
7	4:45 P.M.	WCCO	Social Hygiene
8	11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
11	4:45 P.M.	WCCO	The School Nurse
12	11:00 A.M.	KUOM	Rest and Sleep Renew Our Bodies Daily
13	4:45 P.M.	WCCO	National Heart Week
15	11:30 A.M.	KUOM-KROC-KFAM	Medicine in the News
18	4:45 P.M.	WCCO	Progress in Maternal and Infant Care
19	11:00 A.M.	KUOM	Your Nervous System Directs Your Life
20	4:45 P.M.	WCCO	Cause of Accidents
22	11.30 A.M.	KUOM-KROC-KFAM	Medicine in the News
25	4:45 P.M.	WCCO	On Becoming a Nurse
26	11:00 A.M.	KUOM	We Can Grow Old and Be Well
27	4:45 P.M.	WCCO	Injuries of Mouth and Teeth

AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The program of the Third American Congress on Obstetrics and Gynecology, to be held September 8-12, 1947, in St. Louis, will feature general sessions for all groups making up the congress as well as smaller individual group meetings and round-table discussions. The morning sessions will be panel-type presentations of the following subjects: September 9, Anesthesia and Analgesia; September 10, Cancer; and September 11, Cesarean Section.

The afternoon meetings of the medical section of the congress will consider on September 9, Psychosomatic Aspects of Pregnancy; on September 10, Pregnancy Complicating Cardiac Disease, Diabetes and Tuberculosis; and on September 11, Recent Advances in Endocrinology.

Round-table discussions from four to five o'clock daily will consider such topics as etiology of abortion, asphyxia, fibroids, prolonged labor, infertility, early ambulation, adolescence, treatment of abortion, genital relaxation, ovulation, the menopause, the cystic ovary, uterine bleeding, nutrition in pregnancy, geriatric gynecology, endometriosis and erythroblastosis.

Concurrent sessions and round tables for nurses, hospital administrators and public health workers are being arranged.

The popular forceps and breech demonstrations, that attracted so much attention at the second congress in 1942, will be increased in number so that eighteen demonstrations per day will be held, six each at nine, one and five o'clock daily.

A large scientific and educational exhibit is being set up under the direction of Dr. J. P. Pratt of Detroit, and a comprehensive motion picture program is being arranged by Dr. John Parks of Washington, D. C. The committees assisting these doctors will review applications by prospective participants late this spring. Anyone wishing to make application for space in the scientific exhibit or for time on the motion picture program may obtain the proper blanks from the office of the congress at 24 West Ohio Street, Chicago 10, Illinois.

SECOND SOUTH AMERICAN CONGRESS OF NEUROSURGERY

The second South American Congress of Neurosurgery will be held in Santiago, Chile, April 21-27, 1947. Subjects which will receive special attention include Hydrocephalus, Histology in Brain Tumors (Gliomas and Paragliomas) in Relation to Clinical Findings, and Brain Abscess.

As the meeting is sponsored by the Chilean government, embassies and consulates of Chile have been instructed to grant free visas to those wishing to attend and to extend maximum facilities for obtaining the necessary travel permits.

The registration fee of $18.00 (United States) includes the cost of a copy of the Proceedings of the Congress.

Copy of the program and further information may be obtained from Dr. Carlos Villavicencio, Instituto de Neurocirugia y Neuropatologia, Casilla 70, Santiago, Chile.

EXAMINATIONS FOR APPOINTMENT TO REGULAR CORPS, USPHS

Competitive written examinations for appointment to the Regular Corps of the USPHS to fill some seventy-five vacancies will be held on April 14 and 15, 1947, at various locations. The oral examinations will be held from February 13 to April 9 in strategically located cities. One of these is Minneapolis and the date set is February 27.

Commissions are available to scientists trained in bacteriology, mycology, parasitology, entomology, biology, chemistry, physiology, physics, psychology, et cetera. Salary for assistant scientists is $3,811, and for senior assistant scientists, $4,351 with allowance for dependents.

Application forms and additional information can be obtained from the Surgeon General, USPHS, Washington 25, D. C.

(Continued on Page 206)

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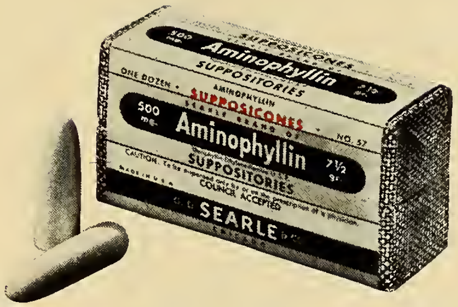

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WOMAN'S AUXILIARY

STATE BOARD MEETING

The fall board meeting of the Woman's Auxiliary to the Minnesota State Medical Association was held at the University Club in Saint Paul, Friday, December 6, 1946.

Mrs. Jesse D. Hamer, Phoenix, Arizona, president of the Auxiliary to the American Medical Association, was present and brought a very interesting message to the board members. A luncheon followed the business meeting.

Hennepin County

On December 6, 1946, the Hennepin County Auxiliary held its annual Christmas tea in the Medical Arts lounge. Mrs. Jesse D. Hamer, Phoenix, Arizona, national president, and Mrs. Melvin S. Henderson, Rochester, state president, were guests of honor.

Mrs. Leonard Arling read "The First Christmas Tree," and Mrs. Elmer O. Dahl and Mrs. Arthur A. Wohlrabe were tea hostesses.

A luncheon was given at the Radisson Hotel, January 3, 1947.

Mr. E. C. Peterson of the Baker Peterson Floral Company gave a demonstration of floral arrangements.

Mrs. Gerald M. Koepke made the luncheon arrangements and Mrs. C. A. Boreen was hospitality chairman.

Mower County

The Mower County Auxiliary met Monday, December 30, 1946, at the home of Mrs. J. K. McKenna, with eleven members present.

Mrs. H. B. Allen presided as Mrs. P. C. Leck gave an interesting outline of the Christmas seal work. She traced the progress of the seal from its origin in 1903 in Denmark to its present date. She told how in 1904 the National Tuberculosis Association was organized to study tuberculosis in all its forms, to spread knowledge as to its causes, treatment and prevention.

The Auxiliary voted to purchase a $5.00 tuberculosis bond.

Luncheon followed the meeting.

Red River Valley

The Red River Valley Medical Auxiliary met Tuesday evening, January 7, 1947, at the home of Mrs. O. K. Behr, Crookston. Mrs. M. O. Oppegaard, president, presided at the business meeting which was followed by several tables of bridge.

Mrs. J. P. Anderson of Red Lake Falls was the high-score prize winner. The out-of-town guests were Mrs. W. E. Anderson of Clearbrook and Mrs. C. H. Holmstrom and Mrs. M. J. Bechtel of Warren.

Refreshments were served by Mrs. Behr.

The meeting followed the annual banquet held in the Red and Gold room of Hotel Crookston, attended by members of the Red River Valley Medical Association and the Auxiliary.

Waseca County

Dr. and Mrs. Clifford Wadd of Janesville entertained the members of the Waseca County Medical Society and their wives at a dinner at Hotel Waseca, January 7, 1947.

At the business meeting of the auxiliary, held after the dinner, the following officers were elected: President, Mrs. B. J. Gallagher, Waseca; Vice President, Mrs. Ray Hottinger, Janesville; Secretary-Treasurer, Mrs. R. D. Davis, Clearbrook.

Winona County

Winona County Auxiliary members attended a dinner with their husbands Monday evening, January 6, 1947, at the Winona Hotel, Winona, Minnesota. A business meeting followed the dinner.

REPORTS AND ANNOUNCEMENTS

(Continued from Page 204)

MINNESOTA PATHOLOGICAL SOCIETY

The regular meeting of the Minnesota Pathological Society was held in the Medical Science Amphitheater of the University of Minnesota Medical School on January 21, at 8:00 p.m. The featured address, "Rehabilitation Following Semi-starvation in Man," was given by Dr. Ancel Keys.

UNIVERSITY GRADUATES AVAILABLE FOR ASSISTANTSHIPS

The University of Minnesota Medical School is graduating a senior class on August 29, 1947. Some of these young physicians have expressed an interest to engage in further training on a preceptorship basis or to serve as office assistants for periods of from three to nine months pending the beginning of regular internships.

Any physician in Minnesota or in the midwest who is interested to discuss such an arrangement with students at the University of Minnesota Medical School may correspond with Dr. M. M. Weaver, Assistant Dean and Secretary of the Committee on Internships, University of Minnesota Medical School.

WASHINGTON COUNTY

The Washington County Medical Society was addressed at its January 14, 1947, meeting by Dr. Karl H. Pfuetze, director and superintendent of the Mineral Spring Sanatorium. Chest x-rays of some eighty-eight high school students, teachers and janitors who had had positive Mantoux reactions were interpreted.

Medicine is the only profession that labors incessantly to destroy the reason for its own existence.—Lord Bryce.

In Memoriam

HARRY WINSLOW ALLEN

Dr. H. W. Allen of Minneapolis passed away on December 28, 1946, following a year's illness.

Dr. Allen was born at Bath, Maine, on July 10, 1872. He lived in Red Wing, Minnesota, before attending the University of Minnesota, from which he received B.S. and M.S. degrees in 1895 and his M.D. degree in 1900.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, and a staff member of St. Barnabas Hospital. For many years he was medical examiner for the Claim Department of the Minneapolis and St. Louis Railway.

Dr. Allen is survived by his wife and a sister, Mrs. George Murfin, Lake Minnetonka.

GEORGE RALPH CHRISTIE

Dr. George Ralph Christie, of Long Prairie, died in Asbury Hospital in Minneapolis on January 20, 1947, in his eighty-seventh year.

Dr. Christie had practiced medicine at Long Prairie for sixty years. He was born in 1858 and graduated from the University of Illinois in 1882. Although he retired some years ago, he continued to be prominent in local business and civic affairs and was well known in Minneapolis.

His immediate survivors are three sons; Dr. Robert of Long Prairie, George W., editor of the Red Lake Falls *Gazette;* and Donald R., of Perham.

Funeral services were held on Wednesday, January 22, at 2 p.m. and interment was at Long Prairie.

DONALD MICHAEL DECOURCY

Dr. Donald Michael DeCourcy was born in Saint Paul, on March 3, 1902, and died suddenly on May 28, 1946. He was buried in St. Mary's cemetery, Minneapolis.

He attended St. John's grade school on Dayton's Bluff and later graduated from St. Thomas Military Academy, Saint Paul. While at St. Thomas College, where he took his pre-medical course, he played halfback in football, played hockey, was Minnesota State collegiate singles champion in tennis. In 1919 he won the Colonel Perkins silver tennis trophy and was Saint Paul city tennis champion in 1922 and 1925. He graduated from Marquette Medical School in 1929, and while there he played defense on Marquette's undefeated hockey teams of 1927 and 1928, who were the Northern Collegiate Champions. He earned a place for himself in Marquette's Hockey Hall of Fame.

He interned at St. Joseph's Hospital, Saint Paul, from 1929 to 1930. He maintained an office on Dayton's Bluff since his graduation and was affiliated with the Veterans Hospital, where he served in the capacity of orthopedic surgeon. He was on the staffs of Mounds Park, St. John's and St. Joseph's Hospitals. He was

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ST. PAUL MINNEAPOLIS

a member of the Minnesota State and American Medical Associations, and the Ramsey County Medical Society. He was also a member of the Phi Chi medical fraternity.

He is survived by his wife, Elizabeth Talbot DeCourcy, whom he married on June 19, 1937, and two sons, Donald Michael, Jr., and Michael Talbot DeCourcy, who was born about one hour after his father's death.

James Wilson, M.D.

DOMINICK PATRICK DEMPSEY

Dr. Dominick P. Dempsey of Wabasha died November 30, 1946, at the age of seventy-six.

He was born at Clermont, Iowa, on September 9, 1870. After receiving a B.S. degree from Valparaiso University in 1903, he obtained his medical education at Creighton Medical School in Omaha, graduating in 1906. He interned at St. Mary's Hospital in Minneapolis and opened an office in Kellogg, Minnesota, and in Wabasha in conjunction with Drs. Lester and Doherty in 1907.

Dr. Dempsey was a member of the Wabasha County Medical Society, the Minnesota State and American Medical Associations.

He is survived by a sister who lives in Dubuque, Iowa, and several nephews and nieces in Iowa and Nebraska.

JOHN JOSEPH EDERER

Dr. John J. Ederer, formerly of Mahnomen, Minnesota, passed away December 11, 1946, in Minneapolis, following a heart attack, after an illness of almost two years.

He was born at Morton, Minnesota, on March 9, 1905. After attending North Dakota University for two years, he took his medical course at the University of Minnesota, graduating in 1930. His internship was served at the United States Marine Hospital in New York. At one time he practiced in Morris and Bellingham, Minnesota, and was an army physician from 1934 until 1936.

Dr. Ederer owned and operated the Mahnomen Hospital at Mahnomen, Minnesota, for four years before retiring in 1944. He was a member of the Red River Valley Medical Society and served as examining physiciain for the Selective Service for a period of four years in Mahnomen County. He was elected president of the Mahnomen Golf Club in 1939.

Dr. Ederer is survived by his wife, Celeste, and two sons, John H. and Paul F. Ederer.

HENRY B. GRIMES

Dr. H. B. Grimes of Madelia, Minnesota, died July 18, 1946, at the age of sixty-nine.

He was born in Mansfield, Ohio, on September 8, 1877. He received his medical degree from the University of Michigan in 1903 and interned at St. Mary's Hospital in Rochester, Minnesota.

After practicing at Lake Crystal, Minnesota, from 1904 until 1911, he moved to Madelia. In 1918 and 1919 he served as captain in the Medical Corps of the army and later was a major in the army medical reserve.

Dr. Grimes was a member of the Watonwan County Medical Society, the Minnesota State and American Medical Associations, and the Southern Minnesota Medical Association.

ELEANOR JANE HILL

Dr. Eleanor J. Hill of Minneapolis, one of the first women graduates of the University of Minnesota Medical School, died December 12, 1946, at the age of seventy-eight.

Dr. Hill was born at Rockwood, Ontario, August 1, 1868. She received her M.D. degree in 1902 and interned at the State Hospital for the Insane at Jamestown, North Dakota, staying there from 1902 until 1907.

She was head of the prenatal clinic at the Northeast Neighborhood House, school physician for the Minneapolis Board of Education, and was a member of the staff at Asbury and Northwestern Hospitals. She was also a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.

Dr. Hill is survived by a sister, Mrs. Abbie A. Pearce of Minneapolis, and two brothers, Charles F. Hill, Ontario, and George A. Hill, Jersey City, New Jersey.

ARNOLD PLANKERS

Dr. Arnold Plankers of Saint Paul died December 26, 1946, at the age of sixty-two.

He attended Central High School and Hamline University, Saint Paul, and the University of Minnesota, where he played football. He received his medical degree from Creighton University in 1910, and a few years later began practice in Saint Paul.

CHARLES E. REMY

Dr. Charles E. Remy, superintendent of the Minneapolis General Hospital from 1930 to 1937, died December 16, 1946, at the Wesley Memorial Hospital in Chicago.

After leaving Minneapolis in 1937, Dr. Remy was associated with the Knickerbocker Hospital in New York.

JESSE LYNN MACBETH

Dr. J. L. Macbeth of St. Clair, Minnesota, died November 19, 1946, at the age of sixty-six, following a lingering illness.

Dr. Macbeth was born in Tivoli township, Minnesota, June 20, 1880.

He received his medical education at Fort Wayne Medical College, graduating in 1905, and began practice in St. Clair in 1906. In 1920 he married Sadie Eaton of Mankato.

Dr. Macbeth was a member of the Blue Earth County Medical Society and the Minnesota State and American Medical Associations.

He is survived by his widow, by three brothers, Walter and George, of Mankato, and Dr. A. H. Macbeth, Fort Wayne, Indiana, and by three sisters, Mrs. Nellie Redner and Mrs. Mary Britt, of North Dakota, and Mrs. Carrie Britt, Eagle Lake.

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VICTOR E. VERNE

Dr. Victor E. Verne, brother of the late Dr. Paul C. Verne of Minneapolis, died December 1, 1946.

Dr. V. E. Verne was born in Minneapolis, March 2, 1883. He graduated from the University of Minnesota Medical School and was a member of the Nu Sigma Nu medical fraternity.

He began practice at Parkers Prairie in 1906 and became associated with Dr. O. J. Hagen in Moorhead, Minnesota, in 1910. In 1914 he established his own office. In 1918 he joined the Medical Corps of the army and was later discharged as a captain.

In 1922 Dr. Verne moved to Long Beach, California, where he had since practiced.

Dr. Verne is survived by his wife and two children.

Communication

St. Cloud, Minnesota
November 27, 1946
Re: Our Forgotten Children

Dear Dr. Drake:

I am writing to you, the editor of Minnesota Medicine about a matter which I feel is important. If, when I get through telling you my story, you too feel that it is worthwhile, perhaps you would like to write an article for your Minnesota Medicine regarding it.

Minnesota has many good public, private and parochial schools which take care of the educational needs of most of the children of our state. There is, however, a group of children, which up until now, has received very little attention. I refer to the homebound crippled children of our state. The reason for this neglect, I believe, is not that people have not been interested in them, but rather, because the cases are scattered and people have not known about them. It is therefore up to some of us who do know what the situation is, and what the possibilities are, to do what we can to see that life is made as normal and satisfying as possible for these deserving children. This, among other things, includes the opportunity to get an education.

St. Cloud has been the pioneer in this field of effort, and is the only city in Minnesota which has in operation at the present time Home School for Shut-in Crippled Children, conducted through its public schools. Minneapolis has just recently begun operations to provide Home School for its shut-in crippled children.

As long as 1935, the school authorities of St. Cloud recognized the needs and rights of physically handicapped children of our city and mapped out a program of education for them. The work was first carried out through a WPA project, which was planned and supervised by the public schools, with the actual home school work being carried out by WPA teachers. When WPA was discontinued, interested members of the St. Cloud Public Schools Administration collected information from other states concerning the operation of classes for their physically handicapped children and finally, in 1943, wrote a bill which they presented before the Minnesota State Legislature. It was supported by many interested civic and education groups. The bill was passed and became a law. Ever since that time our home classes for physically handicapped children have operated under the new law, with expenses of operation being born by the state. Though this law has been in operation in Minnesota since 1943, no other school district outside of St. Cloud, and now Minneapolis, has availed itself of its opportunities.

The question is, should there not be many more classes for home-bound physically handicapped children in operation in various public school systems scattered throughout the State of Minnesota, to care for our handicapped children? Included in this group are heart cases, spastic cases, rheumatic fever cases, polio cases, and crippled children. Could not a little teamwork and publicity work on the part of doctors, school superintendents, and our State Department of Education bring education to these deserving children? The machinery to do the job is already set up and ready to go, but it isn't being used. Can't we do our bit to give these deserving youngsters the same break that normal children have? Why add a mental handicap to the physical handicap which they already have to bear?

Would you care, Dr. Drake, to bring this problem to the attention of the doctors of the state, through your MINNESOTA MEDICINE, urging them to call to the attention of their superintendents of schools the physically handicapped children of their town, who are being denied an education, just because they can't go to school and get it? I am also at this time writing to the Editor of our *Minnesota Education Journal*, in an effort to bring this matter to the attention of the superintendents and teachers of our state. They seem not to know that a law has been passed to take care of these children. All we need is a little understanding and teamwork and the job can be done. If the doctors will report the cases to the school superintendents and the school superintendents will write to the State Department of Education for permission to set up Home Teaching, the State of Minnesota has already said it would pay the bill. Simple, isn't it?

Thank you very much for anything you may care to do about the matter.

Sincerely,
MARTHA VAN BRUSSEL,
Grade Supervisor

* * *

EDITOR'S NOTE: The above letter from Miss Van Brussel calls attention to the provision, by the state, for free home instruction of crippled children of school age unable to attend school or the special public school classes. In Minneapolis the Dowling School and in Saint Paul the Lindsay School for crippled children provide special instruction and free transportation for handicapped children who are able to take advantage of these special schools. In the cities and country districts, there are many additional youngsters who are confined to their homes and, therefore, unable to acquire an education. These children are known to physicians.

If physicians would report the names of such children to the Board of Education of the local school district, and the Board in turn would report to the Special Class Section of the State Department of Health the names of five or more children living near enough to each other to make visiting by a teacher practical, something might be accomplished.

In order to qualify for such home instruction, each child must be provided with a certificate from a qualified physician, stating the nature and extent of the disability and that the child is one so "deformed or impaired in body or limb" as to be unable to attend special school classes with other children. As home enrollment has a tendency to increase each year, the state reserves the right to require yearly examination of those enrolled.

St. Cloud was the instigator of this worthy movement, and Minneapolis has just recently taken advantage of the provisions of the 1943 law. The rest of the state might well get in line.

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Dr. James J. Kolars opened offices for the practice of medicine and surgery in Faribault on January 1.

* * *

"Recent Advances in Medicine" were discussed by Dr. Martin O. Wallace, Duluth, at a recent meeting of the local Kiwanis Club.

* * *

Dr. Allan G. Janecky, formerly in practice at Thief River Falls, but more recently located at Monroe, Louisiana, has entered general practice at Warroad.

* * *

Announcement has been made of the termination of the partnership of Dr. James A. Sanford and Dr. Anthony H. Field, in Farmington, effective January 1, 1947.

* * *

Dr. Edward H. Juers, of Red Wing, was guest speaker at the December meeting of the Saint Paul Surgical Society held at the University Club. Dr. Juers' subject was "Pulmonary Thrombosis of the Axillary Vein."

* * *

Dr. Hugh Patterson, of Slayton, is holding office hours three forenoons during the week at Lake Wilson—Tuesday, Thursday and Saturday—in order to provide the residents with at least partial medical service.

* * *

Dr. Gordon R. Kamman, of Saint Paul, was the featured speaker at the meeting of the Webster County Medical Society held at Fort Dodge, Iowa, on January 16, 1947. Dr. Kamman's subject was "Psychomatic Diagnosis."

* * *

Dr. Dean Affleck, formerly of Grand Rapids, has resumed his practice at Twin Falls, Idaho, where he had been located for nine years prior to entering military service. Dr. Affleck took his medical degree at the University of Minnesota.

* * *

The practice of the late Dr. G. B. Cross at Lakeville has been taken over by Dr. Paul Wagner, effective January 6. Dr. Wagner was only recently released from military service. He is a graduate of the University of Minnesota School of Medicine.

* * *

Recent experimental use of streptomycin in the treatment of tuberculosis was discussed by Dr. Horton C. Hinshaw, of the Mayo Foundation, in the auditorium of the Natural History Museum at the University of Minnesota on Tuesday evening, January 14.

* * *

CORRECTION

Due to a typographical error, the wrong dosage was given in the last line in the case summary of the article on Epilepsy which appeared on Page 50 of the January issue. The line should read: Dilantin sodium, *0.1 gm.* twice daily, was prescribed.

Dr. Hartvig Roholt, son of Dr. and Mrs. Christian L. Roholt, of Waverly, received his medical degree at the mid-year commencement at the University of Minnesota. Dr. Roholt is completing his internship at the Milwaukee County Hospital, Milwaukee, Wisconsin.

* * *

Dr. Haddow M, Keith, of the Mayo Clinic, has been in New York City for a meeting of the American League Against Epilepsy and the Association for Research in Nervous and Mental Disease. Dr. Keith, who has been vice president of the League, was elected president for the current year.

* * *

Dr. Charles E. Turbak has taken over Dr. Charles E. Baker's offices and practice in Herman.

Dr. Baker, who moved to Fergus Falls some months ago, had been holding office hours in Herman several days each week until a permanent medical practitioner could be secured.

* * *

A portrait in oils of the late Dr. Franklin Raiter, of Cloquet, has been hung in the local hospital. The unveiling, which was held on December 24, was witnessed by men, women and children from all walks of life, representative of the patients to whom Dr. Raiter had given a devoted service.

* * *

Dr. Marland R. Williams, Cannon Falls, has been joined in practice by Dr. Harold J. Anderson, formerly of Saint Paul. Dr. Anderson, a graduate of the University of Minnesota Medical School, was recently discharged from military service, where he was a surgeon in the Army Air Corps.

* * *

Dr. William B. Halme is now associated in practice with Drs. Reino H. Puumala and Marie K. Bepko at the new Cloquet Medical Center. Dr. Halme, who is a former resident of the Kettle River-Automba community, was recently appointed a member of the courtesy staff of St. Luke's Hospital, Duluth.

* * *

Dr. Allan E. Moe has completed his three-year fellowship in Internal Medicine at the Mayo Foundation and received an M.S. degree in science from the University of Minnesota at the December commencement. After February 1, 1947, Dr. Moe will be associated with the Fargo Clinic at Fargo, North Dakota.

* * *

Dr. Frank Falsetti, of Rochester, who was recently released from the Army Medical Corps, is taking postgraduate work at the University of Minnesota School of Medicine. At the time of his induction into military service in 1944, Dr. Falsetti had an orthopedic residency at St. Vincent's Hospital in Toledo, Ohio.

(Continued on Page 214)

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(Continued from Page 212)

Dr. James Chessen, formerly of Duluth, has been awarded a fellowship by the American College of Surgeons. Dr. Chessen, who is in practice in Denver, Colorado, is a member of the faculty of the University of Colorado School of Medicine and consultant to the Denver University Student Health Department.

* * *

Mid-year commencement at the University was a very special occasion for Dr. and Mrs. Denton Engstrom, of Minneapolis. Dr. Engstrom, who has been studying under the Army Training Program and interning at St. Barnabas Hospital, received his medical degree, and Mrs. Engstrom received a B.S. degree as a medical technician.

* * *

The Minnesota Society of Neurology and Psychiatry held a regular monthly dinner meeting at the Saint Paul Town and Country Club on January 14 at 6:30 p.m. The guest speaker was Dr. Barnard J. Alpers, professor of neurology at Jefferson Medical College. Dr. Alpers' subject was "The Correlation, by Pathological Studies, of Retinal and Cerebral Arteriosclerosis."

* * *

Dr. Alfred H. Wolf, Harmony, has taken over the Minneapolis practice of his brother, the late Dr. William W. Wolf, and will locate there permanently. Until another physician can be secured for Harmony, Dr. Wolf will keep office hours there every Saturday afternoon and evening.

Dr. William Wolf died unexpectedly on December 14.

* * *

Dr. Howard Gray, of the Mayo Clinic, has returned from the East where he attended the meeting of the American Board of Surgery in Philadelphia and addressed the Luzerne County Medical Society at Wilkes-Barre on "Problems Associated with Surgery of the Biliary Tract." While away Dr. Gray attended the Clinical Congress of the American College of Surgeons in Cleveland and participated in a panel discussion on surgery of the stomach.

* * *

Dr. Paul Gamble was elected president of the Freeborn County Medical Society at the annual meeting held at the Hotel Albert in Albert Lea in December. Other officers elected at this time were: vice president, Dr. Leo Prins; treasurer, Dr. Ernest S. Palmerston; secretary, Dr. Paul Persons.

The business meeting, which was conducted by Dr. Daniel L. Donovan, the retiring president, was preceded by dinner at 7:00 p.m.

* * *

Announcement has been made of the following fellowship awards by the American College of Surgeons to Minnesota men: Drs. Everett B. Coulter, Earl H. Dunlap, Paul N. Larson, Reinhold M. Erickson, John R. Paine and Wesley G. Schaefer, all of Minneapolis; Dr. David P. Anderson, Jr., Austin; Dr. Rochfors W. Kearney, Mankato; Dr. Donovan McCain, St. Paul; Dr. Anthony J. Spang, Duluth; and Drs. William H. Bickel, George T. R. Fahlund, Fred Z. Havens, Paul Z. Kiernan and Howard H. Lander, all of Rochester.

With his resignation as city health officer and county coroner in January, Dr. James H. Haines, Stillwater, terminated more than thirty years of public service.

Dr. Haines, who is a graduate of Rush Medical College, Chicago, came to Stillwater in 1895, shortly after receiving his degree. He served as superintendent of the City Hospital for two years, then entered private practice, in which he continued until forced to retire recently because of ill health.

* * *

Dr. Robert Elman, associate professor of surgery, Washington University, St. Louis, Missouri, was guest speaker at the meeting of the Hennepin County Medical Society on Monday, January 6, in the Medical Arts Building. Dr. Elman appeared under the joint auspices of the Medical Society and the Minneapolis Surgical Society.

The business session included nomination of officers for 1947-48.

* * *

Dr. Wilfred M. Akins, now of Red Wing but formerly associated with the More Hospital and Clinic at Eveleth, was guest of honor at a dinner for 150 Minneapolis YMCA campers and their fathers given at the Y's year-round camp—Camp Iduhapi—at Lake Independence.

Dr. Akins, who was located in Eveleth for many years, served as camp doctor at Camp Warren which was operated by the YMCA south of Eveleth.

* * *

Dr. Paul Reed has joined the Lenont-Peterson Clinic at Virginia, Minnesota. Dr. Reed, who is a native of Virginia, is a graduate of the University of Minnesota School of Medicine. Following the completion of his internship at the Minneapolis General Hospital in 1937, he entered practice at Langdon and Rolla, North Dakota, where he remained until enlisting in the U. S. Navy in 1942. Dr. Reed was in service for four years and at the time of his separation was lieutenant commander.

* * *

Dr. Duncan E. Luth, Duluth, was guest speaker at a recent meeting of the West Duluth Women's Club. Dr. Luth's subject was India and Burma, on which he is qualified to speak, having been on military assignment in the China-Burma-India Theatre for fourteen months. Dr. Luth, who was in the Army Medical Corps for almost four years, served as group flight surgeon and chief of obstetrical service of the Romulus Air Base. Later Dr. Luth was assigned as surgeon for the Bengal Wing in Burma and was placed in charge of all medical activities at the Ninth Air Base.

* * *

Dr. Jay A. Myers, professor of Public Health and Medicine at the University of Minnesota, is now associated with five major health groups concerned with the study and treatment of tuberculosis. He is general chairman of the Research Council of the American Chest Physicians; a committee member of the National Tuberculosis Association; a member of the recently established subcommittee of the National Research Council; a member of the committee in the Division of Tuberculosis, U. S. Public Health Service, and a member of the Tuberculosis Therapy Study Section of the National Institute of Health.

* * *

Dr. H. H. Perman, formerly of Moorhead, has purchased Dr. P. W. Demo's practice at Wells, taking over about the middle of January.

Dr. Perman took his medical degree at Washington University in St. Louis. On the completion of his internship at the Minneapolis General Hospital, he entered the U. S. Navy Medical Corps. Since his separation from service six months ago, Dr. Perman has been house surgeon at Abbott Hospital in Minneapolis.

Dr. Demo has re-entered the navy medical service and is now on assignment at the Naval Hospital at Bainbridge, Maryland.

* * *

Dr. Lawrence F. Richdorf, Minneapolis, has been appointed co-chairman with Douglas Misfelt, Saint Paul, of the American Legion Child Welfare program.

A major activity of this committee will be a campaign to raise funds for a permanent professorship in rheumatic fever and research to operate in conjunction with the projected Variety Club Heart Hospital at the University of Minnesota.

Dr. Richdorf attended the Legion's Area D Child Welfare Conference held in Omaha, January 9 through 11, when an appeal was made to other Legion organizations throughout the country for assistance in establishing the proposed professorship.

Dr. G. Arvid Hedberg, superintendent of Nopeming Sanatorium, has announced the appointment of Dr. Reno W. Backus as associate medical director to succeed Dr. Robert Davies, who resigned to take a position in Seattle.

Dr. Backus is a graduate of Rush Medical College, Chicago. He was superintendent of the Methodist Hospital in Peking, China, for fourteen years and while there organized a 100-bed tuberculosis sanatorium. Returning to the United States in 1941, he joined the staff of McGregor Sanatorium in New York. Later he was associated with Glen Lake Sanatorium in Minneapolis, and has been on the staff at Nopeming since July 1, 1943.

* * *

Dr. Ralph Larson, who has been associated in practice with Dr. Marvin R. Williams at Cannon Falls for the past year, has opened offices at Anoka and purchased a home there.

Dr. Larson is a 1940 graduate of the University of Minnesota Medical School. He served his internship at the Orange County, California, General Hospital, then entered private practice. A short time later he was inducted into the Army Medical Corps. As a battalion surgeon he served in England for two years and took part in the invasion of Normandy, where he was wounded and evacuated to England. At the time of his discharge, Dr. Larson had completed fifty-two months of military service.

* * *

Dr. Ernest F. Cowern, North Saint Paul, was guest of honor at an "appreciation party" sponsored by Fellowship Lodge, AF and AM, and members of the East-

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ern Star during the Christmas holidays in recognition of Dr. Cowern's forty-three years of service to the community. Among the 400 persons who attended were many of the 1,360 babies Dr. Cowern has delivered since coming to North Saint Paul in 1903.

Dr. Cowern graduated from Dartmouth in 1902 and practiced for a short time in Vermont and New Hampshire before coming to North Saint Paul. He has been local school physician for many years and still is "on the job."

* * *

Dr. Kenneth A. Peterson, formerly of Saint Paul, has opened offices in association with Dr. Frank D. Gray, of Marshall.

A graduate of the University of Minnesota Medical School, Dr. Peterson interned at the Minneapolis General Hospital and was resident physician at the Midway Hospital in Saint Paul for the two years prior to his entry into the army. His military assignments included duty at Northington General Hospital in Tuscalusa, Alabama—a neurosurgical, orthopedic and plastic surgery center—and the Regional Hospital at Fort McClellan, Alabama, where he was chief of the outpatient department. Dr. Peterson was separated from service last fall.

* * *

Eighteen new members, fourteen of them veterans of World War II, were admitted to the Hennepin County Medical Society at the meeting on January 6.

The veterans were: Drs. Eugene Edward Aherne, Evrel Arthur Larson, Howard Martin Frykman, Howard Hoffman Groskloss, Donald Ernest Otten, George Werner, Gordon Strom, Vincent Frances Swanson, John Patrick Kelly, Donald Richard Reader, John Lowell Stennes, Eric Kent Clarke, Stanley Guy Law and Clifford Orvis Erickson.

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Other new members are Drs. Helen Robertson Haberer, John Jacob Kaplan, Raymond E. Buirge, and Donald John Erickson.

* * *

Dr. T. S. Eberley, formerly of Anoka, has entered practice at Benson. A 1937 graduate of St. Olaf College, Northfield, Dr. Eberley took his medical degree at the University of Minnesota in 1941. He served his internship at the Minneapolis General Hospital, then entered the Army Air Force, where he was made a flight surgeon. His assignments during four years in service included twenty-eight months in Europe, with duty in England, France, Belgium, Holland, Luxembourg, Germany, Austria and Switzerland.

At the expiration of his terminal leave on February 15, 1946, Dr. Eberley enrolled at the University for a six months' postgraduate course. Recently he had been practicing in association with Dr. James J. Warner at Perham.

* * *

Eight oil paintings which included Rochester scenes and California landscapes, the work of Dr. John E. Crewe, were exhibited in a downtown Rochester store during the first week of January.

Dr. Crewe, who is seventy-four and has been in medicine for half a century, started painting as a hobby about fourteen years ago, but he has never had any instruction. Most of the work has been done during the past few years when his health was such that he had to take things easier.

In all, Dr. Crewe has completed about twenty paintings, some of them in water color, his first media. The work is notable for a fine sense of color. Except for a showing of a few paintings at a physician's hobby show, this is the first time Dr. Crewe has exhibited his work.

* * *

Effective January 1, 1947, Dr. Luverne H. Domeier, formerly of Sleepy Eye, began practicing at New Ulm in association with Dr. Otto J. Seifert, whom he had been assisting for the past several months.

Dr. Domeier is a graduate of St. Thomas College, Saint Paul, and took his medical degree at Loyola University, Chicago, in 1939. Following the completion of his internship at St. Joseph's Hospital in Saint Paul, he took postgraduate work at Wayne University, Detroit, Michigan, where he was granted a fellowship in the Department of Pathology in 1940. He has also been pathologist in hospitals in Pontiac and an instructor at Wayne. His army service includes three years as director of laboratories and internal medicine in hospitals in Florida. At the time of his discharge, Dr. Domeier was a major.

* * *

After an absence of five years, Dr. Charles Vandersluis has resumed his practice at Bemidji. Dr. Vandersluis is a graduate of the University of Minnesota Medical School and interned at the city hospitals in Baltimore and St. Louis. He entered practice at Bemidji in

1935 and for the four years immediately preceding his entry into military service in 1942 was coroner of Beltrami County.

Dr. Vandersluis' military assignments included nineteen months in New Guinea and the Philippines. He was returned to this country for separation from service in November, 1945. For the past year he has been engaged in postgraduate work at the University of Minnesota—six months' study in pathology and six months in disease of the heart and blood cells. Dr. Vandersluis is limiting his practice to internal medicine.

During the doctor's absence from Bemidji, Mrs. Vandersluis and their two children remained at home there.

* * *

Dr. Frank W. Quattlebaum and Dr. Jane E. Hodgson have opened offices at 511-512 Lowry Medical Arts Building, Saint Paul, for the practice of surgery, gynecology and obstetrics.

Dr. Quattlebaum is a graduate of the University of Georgia School of Medicine, Class of '39. His internship and an assistant residency at the Medical Center, Jersey City, New Jersey, were followed by a fellowship in obstetrics and gynecology at the Mayo Clinic.

Dr. Hodgson took her medical degree at the University of Minnesota in 1939 and also served her internship and an assistant residency at the Jersey City Medical Center. While there she was married to Dr. Quattlebaum.

For the past year and a half Dr. Hodgson has been practicing at New Smyrna Beach, Florida, and Dr. Quattlebaum was stationed with the Army Medical Corps at Daytona Beach, nearby.

* * *

New and expanding plans for the Mayo Memorial on the University of Minnesota campus now under consideration call for a 19-story structure which would include a new cancer research institute, a wing for the University's School of Public Health, medical administrative offices, an addition to the University Hospitals, a medical and biological library and a large auditorium.

The estimated cost of the Memorial under the original plans was $2,000,000, of which the legislature had appropriated $75,000 and the rest was to be raised by private subscription. If the new plans are adopted, considerably more money must be raised, and the Founder's Committee is studying possible new sources. Among them are a Federal grant, and another appropriation from the Minnesota Legislature. The Minnesota Cancer Society is considering a separate campaign to raise the necessary funds for the Cancer Institute.

Dr. Donald J. Cowling, Saint Paul, is chairman of the committee, and Dr. George S. Earle, Saint Paul, is secretary.

* * *

Dr. Henry W. Meyerding, of Rochester, has returned from a European trip during which he attended a number of medical meetings and gave several addresses. While in Amsterdam, Dr. Meyerding addressed the Society for Furtherance of Physics, Medicine and Surgery, which was established in 1820 and is the oldest medical society in Holland. He was introduced to the gathering by Dr. Peter Formijne, general president of the society, who was a graduate student in medicine at the Mayo Foundation in 1929 and 1930.

In Paris Dr. Meyerding attended the Congress Francaise de Chirurgie, and was elected an honorary member in the Academie de Chirurgie Francaise, which recently celebrated its one hundredth anniversary. He also spoke at a meeting of the Societe Francaise d'Orthopedic and was elected to honorary membership in this organization.

While in Brussels Dr. Meyerding attended the International Society of Orthopedic Surgery and Traumatology as delegate for the United States, and presented a paper on the "Surgical Treatment of Malignant Tumors of the Bone." He was honored by being elected president of the next Congress of the Society, which will be held in Amsterdam in the fall of 1948.

Dr. Meyerding also assisted at the dedication of a

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* * *

Among those receiving their medical degrees at the December commencement at the University of Minnesota were: Dr. Melvin Reeves, of Brainerd; Dr. William H. Ryan, of Little Falls; Dr. James H. Kelley, of St. Paul; Drs. John Watson, Peter Habein, Charles Conley and Mark Anderson, Jr., all of Rochester.

Dr. Ryan is serving his internship at the Almeda County Hospital in Oakland, California, and will be there until June.

Dr. Reeves, who has been at the Sheltering Arms Hospital in Minneapolis, serving a junior internship for the past year, will take his senior internship at the Good Samaritan Hospital in Portland, Oregon, and St. Barnabas Hospital in Minneapolis.

Dr. Watson will intern at the Robert Packer Hospital in Sayer, Pennsylvania.

Dr. Habein, who is the son of Dr. Harold C. Habein, Rochester, has accompanied his mother to Tucson, Arizona, where they will spend the winter.

Dr. Anderson, son of Dr. Mark J. Anderson, has gone to California with his parents and will serve his internship at the Orange County Hospital in Los Angeles.

* * *

Twenty-one Rochester physicians were awarded degrees for work done at the Mayo Foundation at the December Commencement of the University of Minnesota, and ten physicians received degrees, in absentia, for work performed in the various fields of the Foundation.

M.S. degrees in surgery were conferred on Drs. John A. Evert, Ellis E. Fair, Robert F. Golden, Chester L. Holmes, Charles S. Joss, Cecil G. McEachern, Wendell L. Nielsen, John H. Remington, F. H. Smith and John Zaslow.

Drs. David T. Carr, Edgar A. Haunz, Mary C. Long, Allan E. Moe and Irwin M. Vigran, received M.S. degrees in medicine.

Dr. John R. Hodgson received an M.S. degree in radiology; Dr. J. J. Hinchey, in orthopedic surgery; Dr. John T. Robson, in neurology and psychiatry; Dr. J. W. Pender and Dr. William N. Hardman, in anesthesiology, and Dr. W. S. Green, in dermatology and syphilology.

Those who received the degrees in absentia were Dr. Brown M. Dobyns, Ph.D. in surgery; Drs. A. F. Castrow, Leonard C. Hallendorf, Jack A. Killins, Henry R. Thomas, M.S. in surgery; Drs. Natalie M. Briggs, Richard N. Kent, Paul V. Morton, and A. S. Mann, M.S. in medicine; and Dr. L. Williams, M.S. in neurosurgery.

* * *

ERRATUM

Attention is called to an error which occurred in the Slyd-Rul sent to physicians recently by Ciba Pharmaceutical Products, Inc., on which the conversion of 0.49 grains reads 0.25 grams when it should read 0.025 grams. Slyd-Ruls with this error corrected will be sent in replacement as soon as possible.

* * *

HOSPITAL NEWS

Staff members and associate members of St. Joseph's Hospital, Mankato, held their annual banquet and election of officers at the hospital on December 12.

All the incumbent officers retained their positions for the ensuing year by unanimous vote. They are: president, Dr. H. Bradley Troost; vice president, Marshall I. Howard; secretary-treasurer, Dr. Anthony A. Schmitz. The members of the executive committee are Dr. Alphonse E. Sohmer, chairman; Dr. Roger G. Hassett and Dr. George E. Penn.

* * *

Dr. Viktor O. Wilson, Division of Child Hygiene, State Department of Health, in collaboration with an advisory committee of twenty-three members appointed by former Governor Thye, is taking an inventory of existing hospitals and making a study of the total hospital needs for the state. The survey is being made in order to qualify for a share of the $75,000,000 annual appropriation for construction of hospitals which is expected to be authorized by Act of Congress.

* * *

The management of the More Hospital at Eveleth has announced the addition of two members to the staff. They are Drs. Carleton W. Leverenz and Lloyd H. Klefstad, both veterans of World War II.

Dr. Leverenz, who is a graduate of the University of Illinois Medical School, interned at Ancker Hospital in Saint Paul. He served in the Army Medical Corps for five years and was in Japan when the war ended.

Dr. Klefstad, a native of Duluth where he grew up, took his medical degree at Western Reserve University, Cleveland, Ohio. He was in the U. S. Navy for three years, his assignments taking him practically around the world.

* * *

Dr. L. Kenneth Onsgard, who recently joined the staff of Grandview Hospital in La Crosse, Wisconsin, is still practicing at Houston, where he makes his home.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

CHECK and DOUBLE CHECK on SICKNESS INSURANCE. J. Weston Walch. Price 25 cents; Special prices in quantity. New York: Public Relations Bureau, Medical Society of the State of New York (292 Madison Avenue, New York 17, N. Y.), 1946.

"Check and Double Check on Sickness Insurance" is a new pamphlet published December 15 by the Public Relations Bureau of the Medical Society of the State of New York. The subject is covered in 133 questions and answers with a complete index. By use of this index any speaker or writer can find, in a few minutes' time, material for a 15-minute talk or an editorial a column in length.

The author, J. Weston Walch, is instructor in Economics and Business Law, Portland (Maine) High School, and manager of the Platform News Publishing Company. He studied the subject of sickness insurance while preparing a handbook for use by participants in nation-wide high school debates. Here he gives what he thinks are the outstanding points in the controversy, from the standpoint of a plain American citizen, just as they impressed him in the course of his own work on the handbook.

Mr. Walch was asked to do the job because this question will ultimately be decided in the forum of public opinion. He is thinking here of what would happen to *him* under compulsory sickness insurance. As an average citizen, he doesn't like it. Legislators already know the doctors don't like it. Here is the evidence that the J. Weston Walches of the country don't like it, either. The last question propounded by the booklet is, "Mr. Walch, in your study of this subject what point strikes you most forcibly?" The author answers as follows:

"I am most interested in my own health and well-being and that of my family. I have tried to examine every important point on the subject of sickness insurance on the basis of how I thought my own interests would be affected. I feel that there are other ways of improving the medical care of the American people without resorting to government compulsion.

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CHILDREN IN THE COMMUNITY. The Saint Paul Experiment in Child Welfare. U. S. Children's Bureau, Social Security Administration, Federal Security Agency, Washington, D. C.: Children's Bureau, 1946. Free upon request.

An experiment that has challenging implications for communities in dealing with boys and girls with behavior problems is described in this recent publication of the U. S. Children's Bureau. It tells of the work done and the results obtained in Saint Paul, Minnesota, in bringing all community resources to bear in a "first aid" program for youth in trouble.

This experimental project, which was initiated by the Bureau and developed with the co-operation of social agencies in Saint Paul, and carried on from 1937 to 1943, was confined to a neighborhood of 20,000 persons. The neighborhood was small enough for study purposes and yet large enough to provide a good cross-section of a metropolitan community. It represented a wide range of nationality and of family income. The children involved were typical of those to be found anywhere, their behavior problems presenting the usual run of truancy, pilfering, school failure, inability to get along with other children, and the like.

The idea back of the Children's Bureau undertaking was to see what might be done "early in the game" to get a child and his family the help the community had to offer. The schools, the churches, and youth organizations, such as Boy and Girl Scouts and the like, were involved. So were social and law-enforcement agencies, and the community's health services. All were drawn into a plan which called for their referring to the proj-

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ect—The Community Service for Children—boys and girls they knew to be in trouble of one kind or another.

Altogether some 700 children were given individual assistance. For some the project's role was largely that of referring the parents or the teachers or some other interested person to a place or person who could help. The referral, in most such cases, followed upon a diagnosis by the project. But, for some 400 boys and girls much more was done and in many cases over a long and difficult period. In four out of five cases, an improvement was brought about and in a high proportion, almost 70 per cent, a change for the better was made in the situation causing, or affecting, the child's behavior, thus giving promise of a long-run improvement. Significantly, although the juvenile delinquency rate for the city rose, in the section in which the project was operating a decline took place.

The value of the project, the Children's Bureau reports, lies in the fact that nothing was done in St. Paul that could not be done in other communities. Those directing the project simply went into the community to try to make a better use of what was at hand in the way of services for children. What developed that was new was the setting up of a referral center to serve as a "first-aid station," as it were, for boys and girls in trouble. Any community, the Bureau points out, could bring about such a co-ordination of its services for children. In small communities, it adds, the child welfare worker or some other person in a strategic position might well serve as the co-ordinator.

Lacking such a central place, or person, informed about all community resources, those dealing with the youngsters—parents, teachers, clergymen, welfare officials, court officials and police officers—are thrown back upon their own resources. They often do not know how to go about seeking help. The Saint Paul project showed how they could get help, and, as a result, many children were benefited.

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(Continued from Page 175)

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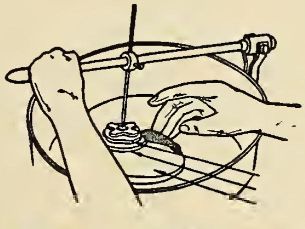

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MOBILE SPEECH CLINIC UNDERTAKES SURVEY

(Continued from Page 189)

patient again, there is no need for further consultation. So after the prescribed medicine is gone, the infected ear is ignored until the child's hearing is impaired; or parents who were advised to "give your child time" to learn to talk give him years while his disability grows more and more impervious to treatment.

But University and Minnesota Association officials are convinced that public education can alert the general population to the vital necessity for early diagnosis and correction of such handicaps. And that, in the long run, is exactly what the Mobile Speech Clinic hopes to accomplish.

BOMBAY TO BROOKLYN

Nature's medicine chest is a worldwide reservoir. From Bombay to warehouses in Brooklyn come the hard, bitter seeds of the nux vomica tree, used as a stimulant and general tonic. The fruits are collected in India by tribal natives, who clean, dry and sort the nux vomica seeds in crude trays before shipment.

Ipecac, the dried roots of the ipecacuanha, a low struggling shrub with emetic and expectorant properties, comes from the moist, woody areas of Brazil, Bolivia and Colombia.

Thyme, the aromatic herb, dots the fields of Italy, France and Spain. Its leaves and flowertops produce a soothing oil used in some proprietary medicines in connection with bronchitis and whooping cough.

The Alps, Pyrenees and Vosges of Europe are speckled with the greenish-white flowers of sweet-smelling angelica and the yellow gentian, or felwort. The seed of the former becomes a carminative and tonic. The gentian root, pulled up in summertime and heaped on the ground to ferment, is a bitter tonic. Also flourishing in these mountains is the poisonous monkshood, prescribed under the name of aconite for fevers and heart conditions.

Purgative plants have similar backgrounds. Senna, a constituent of some laxative preparations, is the sun-dried leaflets of a flowering yellow shrub, knee high, which thrives on the heat of the Nile Valley as well as in India. Arabian senna leaves are picked twice a year, crammed into large palm leaf sacks and transported across the desert by camel back to the market places of Port Sudan and Alexandria.

Aloe, a cathartic whose succulent pale green leaves are snipped open and drained into kettles to produce a dried juice, is shipped in gourd shells from Socotra Island, Africa, and from Curacao.

Jalap, the potent purgative, is the dried, tuberous root of a plant grown 6,000 feet above sea level near the city of Jalapa in Vera Cruz. The roots, having been dried out over the hearths of native Indian huts, have a distinct smoky taste.

Agar-agar, a bulk-producing agent as well as a bacteria culture medium in research laboratories, is cultivated by Japanese deep-sea divers fathoms beneath the ocean surface. This peculiar seaweed produces a mucilaginous substance which is carried up into the dry-cold air of the Japanese mountains to be dehydrated and extruded into long, flat strands.

Frangula, the bark of the European buckthorn shrub, irritant psyllium seeds from the Mediterranean and cassia pulp of the pods from the puddingpipe tree in the East Indies are among other laxative herbs from distant sources.

Cloves, a good mixer with drugs, is a spice made of the dried flower buds of the evergreen clove tree in the Philippines and Molucca Islands. In Zanzibar, natives secure the pungent buds by thrashing the trees with bamboo rods. The cloves are spread out on mats to dry in the sun before being baled for export.

Many of these roots, leaves, seeds and flowers are also used in flavoring foods, as condiments, and in perfumes. Aromatic myrrh, for instance, the sweet-scented gum drawn from myrrh trees in Somaliland, has triple duty: as a flavoring extract, as a perfume and as an antiseptic in dentifrices and mouth washes.—*O.P.I. Bulletin*, August, 1946.

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Epithelial Neoplasms of the Appendix

(Continued from Page 178)

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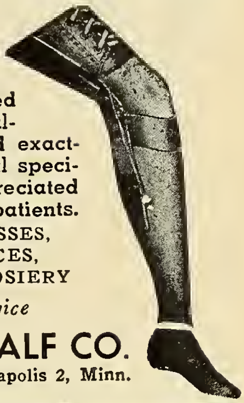

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*R. H. Follis, D. Jackson, M. M. Eliot, and E. A. Park: Prevalence of rickets in children between two and fourteen years of age, Am. J. Dis. Child. 66:1-11, July 1943.

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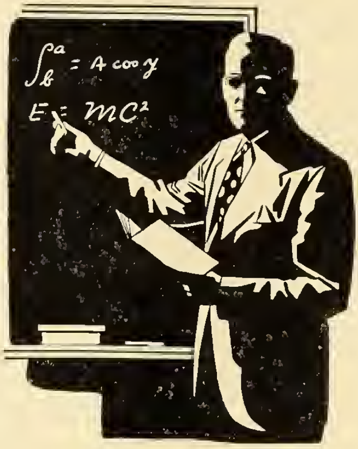

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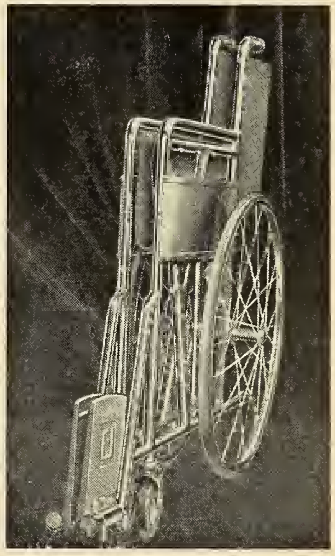

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[1] Howard, J. E.: Bull. Johns Hopkins Hosp., *74*:313 (May) 1944.

[2] Co Tui, C.; Wright, A. M.; Mulholland, J. H.; Barcham, T., and Breed, E. S.. Ann. Surg. *119*:815-823 (June) 1944.

[3] Hirshfeld, J. W.; Abbott, W. E.; Pilling, M. A.; Heller, C. G.; Meyer, F.; Williams, H. H.; Richards, A. J., and Obi, R.: Arch. Surg. *50*:194 (Apr.) 1945.

[4] Lund, Chas. C., and Levenson, S. M.: J. A. M. A. *128*:95 (May 12) 1945.

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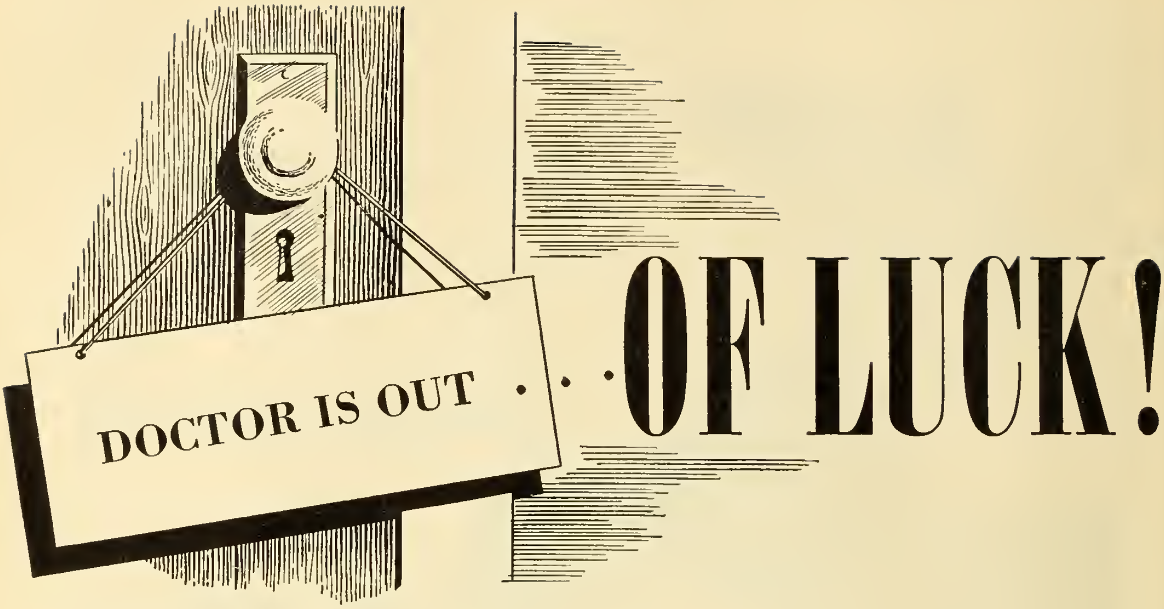
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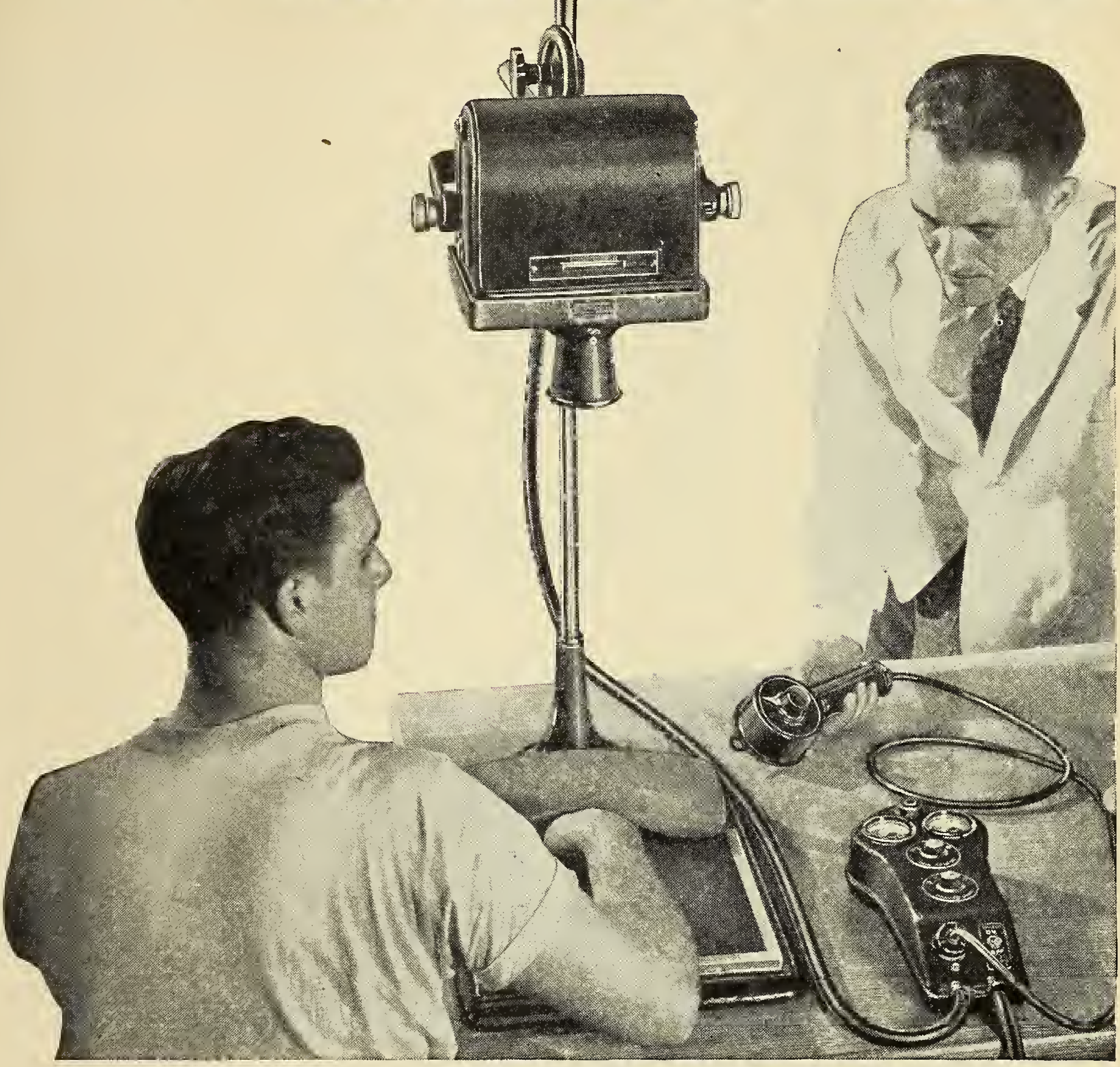

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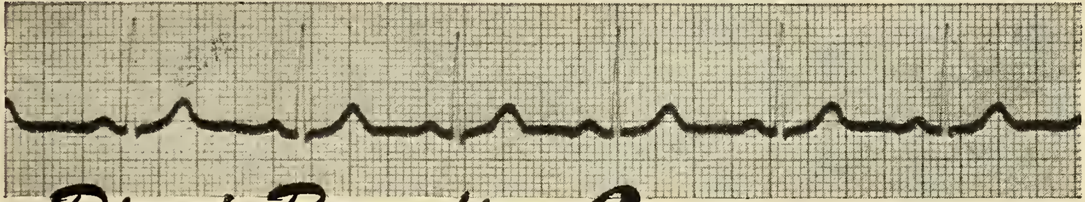

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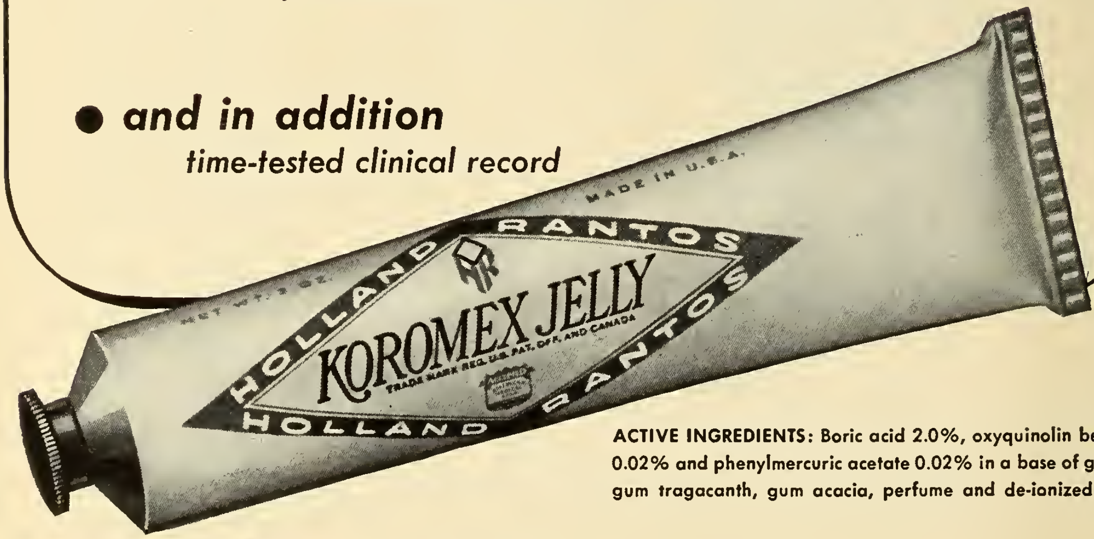
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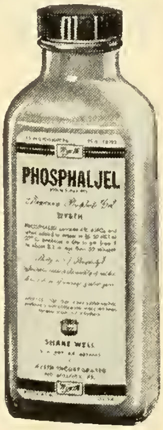

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**Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
Laryngoscope, Jan. 1937, Vol. XLVII, No. 1, 58-60
Proc. Soc. Exp. Biol. and Med., 1934, 32, 241
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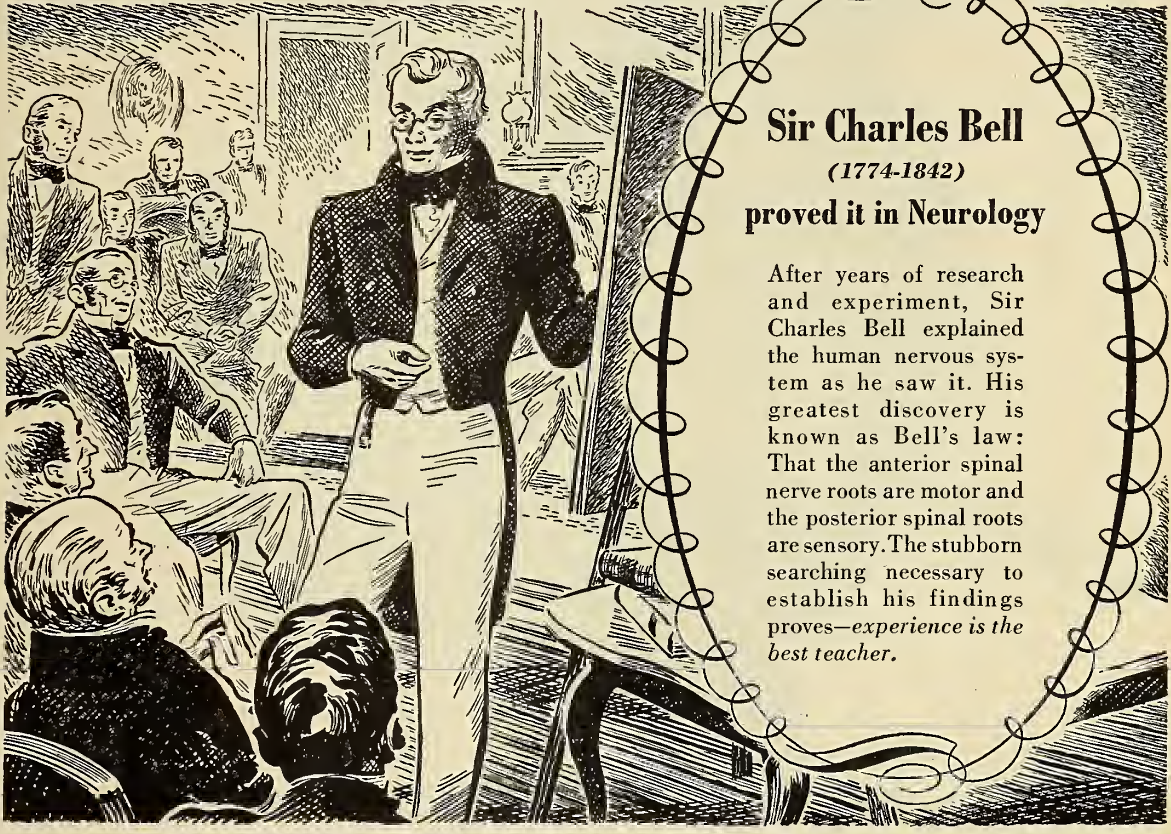

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(1) Menefee, E. E., Jr., and Atwell, R. J.: South. M. J. 39:726 (Sept.) 1946.
(2) Woodward, F. D., and Holt, T.: J.A.M.A. 129-589 (Oct. 27) 1945.

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2 Gold does not benefit all patients with rheumatoid arthritis.

3 Gold is not the final answer to the treatment of rheumatoid arthritis.

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5 From 10 to 20 per cent or more of patients who have received gold therapy relapse after stopping the drug.

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*Kamman, G. R.: Fatigue as a Symptom in Depressed Patients, Journal-Lancet 65:238 (July) 1945.

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[1] Human Fertility 10: 25 (Mar.) 1945.

[2] Warner, M. P.: J.A.M.A. 115: 279 (July 27) 1940.

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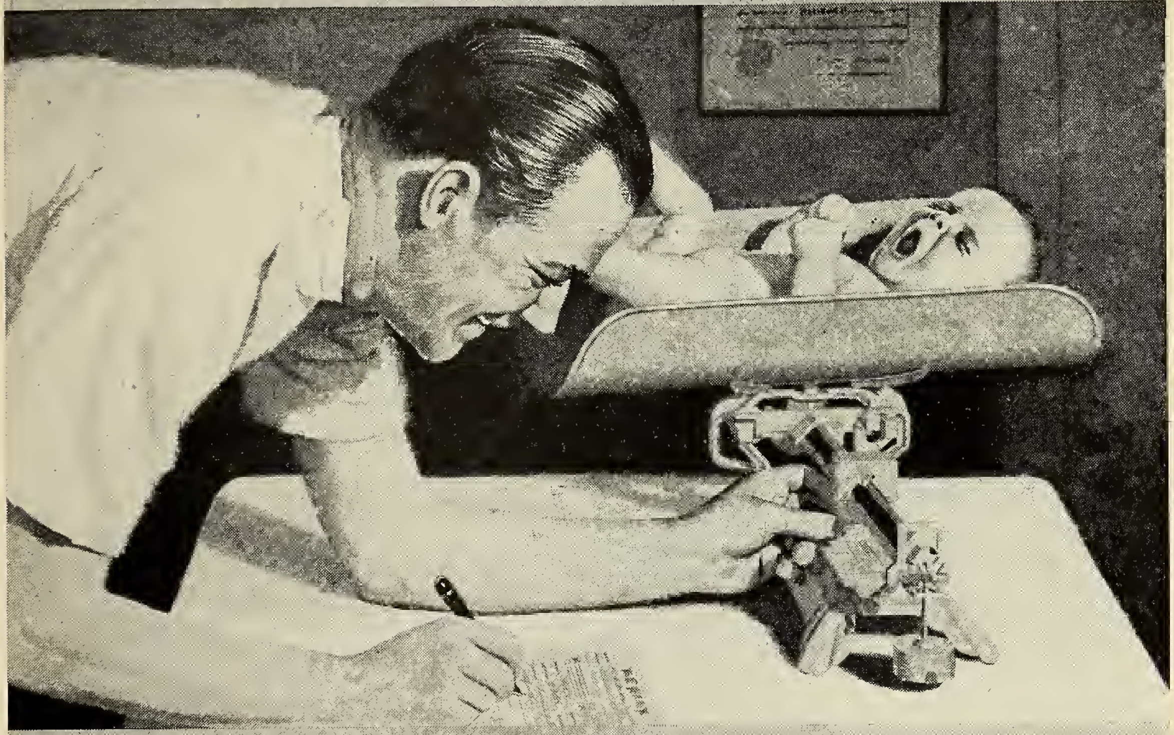

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 March, 1947 No. 3

ACUTE INTUSSUSCEPTION IN INFANCY AND CHILDHOOD

Report of Fifty-Eight Cases

F. H. MAGNEY, M.D., F.A.C.S.
Duluth, Minnesota

THIS study is based on the cases of acute intussusception coming to operation in St. Mary's and St. Luke's Hospitals during a period of twenty-five years, or from 1921 to 1945 inclusive. There were fifty-six patients who underwent fifty-eight operations. The condition recurred in two cases, necessitating a second operation. Both of these patients survived. The high mortality universally reported indicates that there is a field for further study in order that there be a more general early recognition of this condition, as well as a more early resort to surgery. Only by doing so can we reduce the mortality rate.

No attempt has been made here to determine the etiological factor in each case. Theoretically many factors may play a part, but Ladd and Gross in their series of 484 operated cases were able to determine the cause in only 5 per cent. Smith, in thirty-five cases including all ages, reported that the cause was found in seventeen. It must be noted that it is much easier to find the cause in an adult than in an infant or young child, as in the adult it is usually brought about by some mechanical abnormality or pathologic condition. In infants its occurrence is most prevalent between the ages of four and ten months, which is the time their diet is being shifted from a liquid to a solid one, so it is thought that this is an etiological factor. Its appearance is quite often during or shortly after a siege of acute enteritis. The disturbed intestinal peristalsis at this time may produce the mechanical inbalance that causes the bowel to invaginate. Meckel's diverticulum is accepted as a causative factor. This was found in two of the cases.

The youngest child in this series was seven and a half days old and the oldest twelve years. Seventy-four per cent were less than one year old, and the highest incidence came at six months. All but three were less than three years old. Sixty per cent were boys and 40 per cent girls, which is approximately the ratio found in other surveys. Ladd and Gross report 62 per cent males and 38 per cent females.

There are only three main or cardinal symptoms, and there being only three, every physician having to do with infants and children should keep these in mind. They are namely, intermittent colicky pain, vomiting and bloody stools. Seventy-three per cent of the children showed all of these symptoms, and all had at least one of them. If on examination an abdominal mass can be felt, the diagnosis is certain. If in addition to this, a mass is felt by a rectal examination, there should be no doubt that one is dealing with an intussusception. In 60 per cent an abdominal mass was felt, although only in 20 per cent was a mass felt rectally. The latter condition can be found only if the intussusception has advanced well down in the large bowel, which in most cases would indicate that the condition has existed for some time.

Even the early symptoms are severe enough to indicate that the child is seriously ill, and they should suggest the correct diagnosis. I am sure that many physicians have made the diagnosis by having the mother relate the child's actions over

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Presented before the Duluth Surgical Society and the Duluth Pediatric Society.

TABLE I. INCIDENCE OF INTUSSUSCEPTION ACCORDING TO AGE

Age	Cases
7 days	1
1 month	1
2 months	0
3 months	2
4 months	6
5 months	4
6 months	10
7 months	4
8 months	5
9 months	5
10 months	4
11 months	1
12 months	4
13 months	2
14 months	1
15 months	0
16 months	0
17 months	0
18 months	0
19 months	0
20 months	0
21 months	1
22 months	0
23 months	0
24 months	1
2 to 3 years	3
3 to 4 years	0
4 to 5 years	0
5 to 6 years	1
6 to 7 years	0
7 to 8 years	0
8 to 9 years	0
9 to 10 years	0
12 years	2

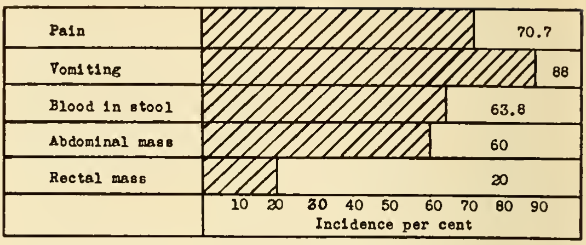

Fig. 1. The frequency of characteristic signs and symptoms of intussusception in infancy.

the telephone. In most cases the onset was sudden and consisted of colicky abdominal pain lasting only a few seconds and occurring every ten to thirty minutes. Usually the patient is so young that he cannot describe his pain but the parents will note that the child becomes intermittently pale, draws up its legs and cries out. It may utter a grunt during the paroxysms. It may appear well between these spells and even go back to its play. Vomiting is sometimes the first symptom and almost always an early one. As the intussusception progresses and the obstruction becomes more definite, there is pallor, sweating, dehydration, and later, shock. In this series, vomiting occurred in 88 per cent of the cases. Blood in the stool or on the examiner's finger was present in 63.3 per cent although it was noted that it was less likely to be present if the case was seen early. Ladd and Gross report blood passed by 85 per cent of their patients; Gibbs and Sutton report 70.9 per cent. According to our findings the mortality was 30.8 per cent when blood was present and 15.8 per cent when absent, or nearly twice as high in the presence of blood. This differs from the findings of Gibbs and Sutton who report a mortality of 22.5 per cent with melena and 42 per cent without.

Intussusception does not seem to appear especially in a child that is below par or with a history of nutritional disturbances, but rather in a healthy and well-nourished one. There may be one or two normal bowel movements followed in most instances by bloody mucus resembling current jelly. The pulse is usually rapid and there is evidence of pain the lower right quadrant. Even when in a state of shock, the child will thrash around, cry, and show other evidences of having pain. An elevation of temperature was observed in twenty-two cases or 38 per cent. It is sometimes difficult to palpate a mass in a well-nourished child even though a mass is present. It may be necessary to give a general anesthetic to relax the abdominal muscles. If this is done, the operation room should be set up so that the operation can be carried out under the same anesthesia. The mass is sausage shaped, but may be rather ill defined. If the invagination is small it may be located under the edge of the liver and be hard to palpate.

The intussusception may advance through the whole length of the large bowel and even protrude through the anus and look like prolapse of the rectum.

The laboratory findings were not of much value in this series, as the history and physical findings were so convincing in the majority of the cases that the laboratory was not called upon for assistance. This may have been a time-saving factor as the taking of laboratory specimens, their examination, and the interpretation would tend only to delay the operation. Three cases not reported in this series were supposed to have been reduced by enemas. The majority of the Duluth physicians are of the opinion that treatment is strictly surgical, and the so-called conservative methods were not attempted. No evidence was found in the records that the hydrostatic method of Hipsley was used. In the very few cases in which reduction was attempted by methods other than surgery, a barium enema was used under fluoroscopic observation. Surely no method of this nature should be used if the

TABLE II. OPERATIVE PROCEDURE USED AND ASSOCIATED MORTALITY

Operation	Number	Mortality Per Cent
Reduction:		
Reduction only	31	23
Fixation	5	00
Appendectomy	10	10
Fixation and appendectomy	3	00
Not reducible (tissues necrotic)	1	100
Not reducible (ileostomy tube)	1	100
Resection:		
Primary anastomosis	4	25
Double enterostomy	1	100
Single enterostomy	1	100
Not reduced-serus surfaces sutured at the beginning of intussusception	1	100

TABLE III. DURATION OF SYMPTOMS AND MORTALITY RATE

Duration of Symptoms	Number of Cases	Deaths	Mortality Rate (Percentage)
Less than 24 hours	28	5	18
24 to 48 hours	13	3	23
2 to 3 days	4	2	50
3 to 4 days	5	0	00
4 to 5 days	5	3	60
5 to 6 days	3	2	67

TABLE IV. TYPE OF LESIONS AND RELATIVE MORTALITY

Type	Number	Deaths	Per Cent Mortality
Ileo-ileal	5	2	40.0
Ileo-colic	49	12	24.7
Colo-colic	4	1	25.0

symptoms have been present for some time, as the series showed instances of gangrenous or near gangrenous bowel and in one case a gangrenous Meckel's diverticulum. The latter was resected and the patient recovered. Hipsley does not use his method if the symptoms have been present more than twelve hours.

If a pediatrician is not already in charge of the case or is in consultation, one should by all means be called without delay. There is no one more qualified by learning or experience to evaluate the child's condition and to treat the dehydration, acidosis, toxicity, and even shock, if present, by administering fluids and restoring the electrolytic balance. Blood and plasma may be needed. The dosage of the pre-operative medication should be left to the decision of the pediatrician. In this series, the mortality rate with a pediatrician in attendance was 23.5 per cent as compared with 29.1 per cent without.

Drop ether was the anesthetic of choice, which conforms to the experience of all other studies. Apparently it is safest and gives the best relaxation. All but five children were given ether. Three had local anesthesia plus ether. Two had local anesthesia plus gas and eight had a combination of gas plus vaporized ether.

Only operative cases in which the pathologic condition was verified are included in this study. Most operators used a right rectus incision, no doubt due to the fact that it gives the best exposure to the region of the ileocecal valve, where the most difficulty is encountered in reduction. The most favorable results are obtained if the duration of the symptoms is short, as the bowel is in better condition and the patient is in better condition to stand the operation. The average duration in this series was 34.4 hours. Ladd and Gross report thirty hours, Peterson and Carter thirty-two hours and Robbins forty-five hours.

Extreme care and gentleness must be used in handling the bowel, due to its friability. Several figures are passed into the left side of the abdomen to locate the head of the intussusception. It is pushed back along the colon. Good progress is usually made until reaching the neighborhood of the ileocecal valve. The bowel must then be brought outside of the abdomen. If there is much edema, this can be reduced by warm compresses. The reduction is continued by a gentle milking process, using the whole hand and squeezing the invagination out. It may be necessary to hold the bowel below between the forefinger and the thumb to steady it. The difficulty encountered near the valve is due to the edema of the gut and mesentery. Perseverance and a prolonged gentle pressure seems to reduce the edema, and in most cases where the situation seems most hopeless, success is achieved. At this point, caution must be exercised and traction avoided. Some operators advise the injection of some glycerin between the two serous layers due to its hydroscopic action on the edematous tissue. After the intussusception has been reduced, the bowl must be observed carefully for tears and viability. Small serous tears can be ignored, but if the tear extends into the muscularis it should be repaired. There is always edema, swelling, discoloration and some degree of hemorrhage, but if observed for a few minutes it will be found to improve in color, especially if a warm saline pack is applied. Immediately following reduction the appendix may appear to be acutely inflamed due to edema, but most authors advise against its removal as it adds to the operative trauma and shock. However, in this series, there was only one death among the eleven who were submitted to an appendectomy. In thirty-one (55.2 per cent) of the cases the operative procedure was limited to the reduction of the intussusception, with eight deaths or a mortality of 28.8 per cent. In one case no attempt at reduction was made as the bowel was gangrenous. The patient died on the operating table. In five cases some method of fixation was done with the idea of prevention of recurrence with no deaths. In one case reduction plus appendectomy and fixation was done without mortality.

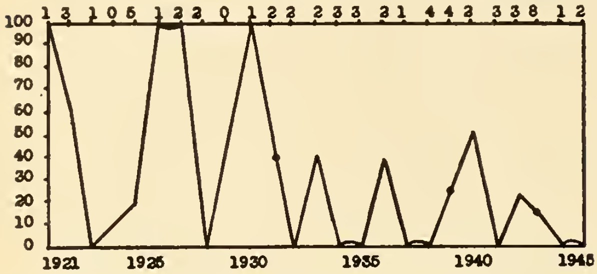

Fig. 2. The mortality rate by years, following fifty-eight operations for intussusception in infancy.

A resection of the bowl was done in seven cases, five of which had a primary anastomosis. There were two deaths, or a mortality of 40 per cent. One had a double enterostomy and one a single, following resection, both resulting in death. Both of these patients were in poor condition before the operation, so the outcome was anticipated. The mortality in all resection cases was 57 per cent which is considered very low. Most reports show a mortality rate of 70 to 100 per cent.

In one case where the reduction was found to be impossible, the serous surfaces were sutured at the beginning of the intussusception and an enterostomy tube inserted. The patient died. A gangrenous Meckel's diverticulum was resected in one case and the patient recovered. No attempt was made to fix the bowel by exteriorization of the appendix as reported by Masson and Judd. Most authors advise against any method of fixation as it only adds to the operative procedure without preventing recurrence. In some cases of recurrence, the invagination of the bowel occurs at a new site the second time.

While it is wise to limit the procedure to a simple reduction, even though it may tax the patience of the operator carrying it out, there are cases in which a resection must be done. In these cases a primary anastomosis was accompanied by the lowest mortality, probably due to the fact that the child cannot stand the loss of the succus entericus. Woodhall has reported the doing of a lateral anastomosis in the Mikulicz operation, thus establishing an immediate continuity of the bowel and preventing the loss of the enteric contents. No such procedure was attempted in this series.

The fifty-eight operations were followed by fifteen deaths, or an overall mortality rate of 25.9 per cent. It is interesting to note the great improvement that has been made in the management of these cases during the last fifteen years.

TABLE V. MORTALITY RATES REPORTED BY DIFFERENT AUTHORS

Author	Per Cent Mortality
Gribsby and Kaplan	20.0
Gordon	22.7
Mayo and Woodruff	23.6
Duluth	25.9
Gibbs and Sutton	30.4
Ladd and Gross	31.2

The first ten years showed a mortality of 46.7 per cent as compared with 18.1 per cent during the last fifteen years. In the last five years seventeen cases were operated upon with only two deaths, or a mortality of only 11.8 per cent.

Gibbs and Sutton report a mortality rate of 30.4 per cent over a sixteen-year period, Ladd and Gross 31.2 per cent, Grigsby and Kaplan 22.0 per cent, Gordon 22.7 per cent and Mayo and Woodruff 23.6 per cent.

The improvement in the results during the more recent years is due to many factors. The early diagnosis and surgery without delay are without doubt of most importance. The improvement in surgical technique plays a great part. The part played by the pediatrician in preparing the patient for operation and caring for him postoperatively is so important that every case should have the benefit of this co-operation. The more recent adjuncts to surgery, such as whole blood, blood plasma, the Wangensteen decompression tube, et cetera, are vital in bringing down the death rate in intussusception.

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FINANCING THE ESTABLISHMENT OF A SMALL HOSPITAL

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OUR discussion is concerned with the establishment of a small hospital, about 50 to 100 beds, in a rural area. It is true many of the principles likewise apply to a hospital of larger size located in an urban center. Recent studies of population indicate that approximately 45 per cent of hospitals in the United States are classified as rural. However, a sizable portion of the rural population is located in areas surrounding urban centers and is not occupied with farming activities. Likewise, the studies are indicating that the rural population would utilize hospital service to the same degree as the urban resident if more facilities were readily available and the cost of such service could be properly financed. Undoubtedly, much of the hospital construction in the next few years will occur in the rural areas.

Launching the Project

For the purpose of this discussion we will assume that there has been sufficient interest in the local community to have resulted in the formation of a small committee requested by the citizens to investigate the possibility of creating a small hospital.

The first step would be to have a survey of the population, health, social and economic characteristics of the area to determine whether there should be a hospital and, if so, what should be the extent of its functions, how large should it be, what facilities are needed to perform the functions as determined, and finally, how can it be integrated with the other hospital facilities of the state program.

A statement of such facts, together with their interpretation on the light of hospital trends, and some analyses of the probability of continued operating support, constitute a real necessity for the launching of a successful project. It tends to keep the local enthusiasm intelligent and within rational bounds. Also, it tends to balance the pressure of local pride with realistic endeavor. If money must be raised for the construction of such an institution, the donors ask very significant questions which cannot be answered without the above data, and such donors usually desire an outside reliable opinion. Therefore, not only is it advisable for intelligent planning, but it also may be considered to be good business in terms of the success of the project.

Such a survey could be conducted by a nearby hospital administrator or a person devoting full time to such consulting services. The nearby administrator usually has the disadvantage of local prejudice, and his recommendations are not so easily accepted, even though he may be a very capable person. The expert consultant who has the benefit of objective distance, also can bring to bear the experiences and conclusions which other communities have experienced outside of the local area. It must not be assumed that such a consultant would always recommend in favor of the construction of a hospital. In fact, I am just completing a survey where we are recommending that no additional facilities be constructed.

The cost of such a survey, including professional fees, will naturally vary with the size of the area, the complexity of the local problem, and the availability of facts. Therefore it may run from $1,000 to $3,000 for a relatively small community. The funds for this purpose can be secured from a local organization such as a lodge, legion, or Rotary Club; from a single individual in the community vitally interested in health affairs, or from local government public funds. The securing of such funds has the additional advantage of giving to the community the first real evidence that the interest for a hospital is deep-rooted—a very necessary fact for the future success of the project.

The next step usually is the formalizing of an organization to serve as trustee in receiving funds and carrying out the objectives. In most cases this is of nonprofit character, and it is well to secure a local lawyer to give advice in the formation of this unit, in order to take advantage of existing state laws which will give freedom from taxation and other privileges. The cost of such assistance is very low. Likewise, it is im-

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portant to secure some hospital advice as to the best forms of by-laws for the operation of such an institution. Here the American Hospital Association has several suggestions, and again the consultant can be helpful in interpreting these in the light of the local conditions.

The third step in launching the project is the raising of capital funds. The amount necessary will be estimated by the consultant in co-operation with an architect. In these days of high construction costs, it is advisable not to conceive of less than $10,000 per bed. In some rare instances it is possible to do this at the present time for $8,000 per bed. In a few situations the cost may even be higher. Such amounts will construct and completely equip the hospital. Included is an architect's fee which usually amounts to between 6 and 7 per cent of the total construction and fixed equipment cost, and a hospital consultant's fee which ranges from 2 down to 1 per cent depending upon the size of the project.

The capital fund campaign usually includes three phases:

1. A public relations phase which involves the telling to the right people the facts relating to the need and the objectives of the proposed hospital.
2. The securing of promised contributions from a selected group of individuals with means, and from corporations located in the area who will be benefited by the new hospital.
3. The conduct of a general campaign in which everyone in the area may have some opportunity of contributing. Normally the larger portion of the funds comes from large givers in corporations. The general campaign usually yields a very small portion of the total amount.

Many communities have found it worth while to employ outside fund-raising experts. There are several very reliable firms who conduct such campaigns with excellent results. They do not raise the money, but assist the local people in doing so. Many of the theoretical objections to the use of such outside units are so much bugaboo and are unrealistic. They do not use high pressure; they have the benefit of the experiences of many communities; they do guide the local effort and keep it continuously in line with the necessity of activity which is not usually possible through normal voluntary effort. They are trained in developing successful techniques. They usually work on a fixed fee basis, which together with the total costs amounts to about 2 to 3 per cent of the total amount raised. They do not undertake a project unless there is reasonable assurance it will be successful. Most communities feel that "now is not the best time" to raise money, whatever time that may be. If one follows that philosophy, no money would ever be raised for welfare projects. Therefore, this barrier should be overcome from the very beginning.

A considerable portion of funds for recent hospital construction is contributed by corporations. Contrary to the general belief, most corporations in rural areas are not soulless, but reflect the attitude and humanitarian instincts of the human beings who direct them. I could give you many illustrations of corporations who have responded enthusiastically and generously to such hospital effort.

If desirable, it is possible to raise some of these capital funds from tax sources—not only from local, county, and state sources, but from Federal funds available under the new Hill-Burton Act, with which I believe you are acquainted. It is possible to secure about a third of the capital from the funds available under the new Hill-Burton Act. However, it is necessary that the local project be integrated into a state program and that the state authority indicate its approval and priority status.

Construction of the Hospital

This is a period of high construction costs. With the uncertainty of labor costs, contractors are padding their bids. Even then it is advisable to leave additional allowances for a possible rise in cost during the construction period. It is the hope that even though labor rates will not be reduced, that the productivity of labor will be increased. It is also hoped that labor's demands will be stabilized, thus making it possible for the contractors to remove the additional padding. No guess is reliable as to when this will take place.

Also, it is difficult in these days to secure suitable materials with sufficient regularity to produce the kind of hospital one desires. It is hoped, with the removal of priorities and the increased productivity of labor, that materials will be available within a reasonable length of time.

In the meantime, many communities are making specific architectural plans for the development of their hospitals. It is well that a relatively long time be available for such procedure in order that ideas may mature, and that with new thinking, the plans can be revamped as many times as necessary until finally satisfactory. It is advisable to hold in mind that the unit is to be used over a long span of years and that errors in the planning will have a serious effect upon later operation.

Most communities, therefore, are employing not only an architect, but a hospital consultant, and it is my belief that both are necessary to give an economic result. No architect, whether he has done several hospitals or not, is in a full position to keep abreast with changes in hospital operation which may effect a big saving in later operating costs. The qualified hospital consultant is in the best position to reflect such results in the architect's plan.

Operating Funds

In the planning of a new hospital, it is very advisable to plan for the financial operation of the institution in advance of its construction. The most potent influence on the net financial result will be the percentage of occupancy of the proposed institution. Studies have indicated that the smaller the hospital, the lower the percentage of occupancy, which is usually the result of the increased proportion of segregation of patients which is imposed upon the smaller units. Therefore, it is very favorable in the planning of the hospital itself to assure as much flexibility in bed utilization as possible, thus insuring as high a percentage of occupancy and income as can be realized.

Current operating capital should be anticipated to carry the loss of operation for at least six months and perhaps better, for a year. In addition it will be necessary to have some funds for current operating purposes. Therefore it is exceedingly advisable that a budget be prepared in advance. Here again the consultant with his knowledge of hospital operation is in the best position, not only to advise the new Board of Trustees in the operating organization of the hospital, but also to aid in the preparation of the budget.

Normally, it is not possible for the hospital which desires to give some free service to the community to secure its complete income from patients solely. There is an increasing tendency for third parties to pay for patients' bills. In many institutions this is as much as two-thirds of their total load. Such third parties may take the form of the voluntary Blue Cross movement, commercial insurance, and local government authorities. Therefore great care should be taken in making financial arrangements with these third parties which will yield a sufficient income to operate the institution. All of these endeavors are possible in the small community as well as the large. Normally, a hospital of the size we are discussing has as a cost of service about $8 per patient per day. With increased labor costs, the chances are that this amount will increase, and within a relatively short time will amount to $10 per patient per day.

Usually it is necessary for the community hospital to secure some outside financial assistance in its operation. If it is possible to secure endowment funds at the same time as one is raising construction funds, such a situation is ideal. However, this is very rarely possible. Therefore, the raising of operating funds usually takes place after the construction of the institution. For the first few years of its existence, the hospital may secure some of these funds from local governmental sources in the form of an annual subsidy in order that the institution may exist at all. Likewise a local annual drive for the operating contributions may be conducted. Many hospitals have existed on these two sources alone for many years before they were able to secure bequests for endowment purposes.

Summary

The successful establishment of a new hospital must depend upon the possibility of giving good service to the community, primarily through developing a good professional staff, and upon sound planning. If this is done, usually the financial needs are met, provided the facts are properly interpreted to the community as a whole.

To accomplish such results, however, the local people should proceed slowly, and with the advice and guidance of persons experienced in the hospital field.

I am informed by leaders in the rural areas in this country that many communities realize the need for hospital facilities and are prepared to put forth the effort and the sacrifices necessary to secure such community service. Therefore, I have every confidence that the majority will proceed along intelligent lines and that the rural population will eventually have available those hospital services vitally necessary to their full life.

A SHORT COMMENTARY ON THE HISTORY OF THE CIRCULATION

Modern Addenda

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THE casual student of medical history associates two famous and well-known historic names with the discovery of the circulation of the blood. He knows that the martyr, Michael Servetus, generally has been regarded as the discoverer of the pulmonary circulation and that William Harvey conceived and described both the systemic and pulmonary circulation, suggested the existence of the capillary circulation and described the essential functions of the heart. Most physicians today consider that Harvey discovered the circulation. I have no intention to deprecate the monumental contribution of Harvey but rather to maintain the accuracy of historical documentation.

In order to do this it is necessary to present the facts as they are inscribed in the records of the past and to supplement the older records with more recent biographic research. In such reexamination of historical data several less prominently mentioned contributors are brought to attention, and particularly one who was introduced to readers only eleven years ago. In presenting this commentary it is not my intention to become involved in the futile controversy relative to priority which is currently being carried on among various medical historians. It is, however, my desire to present certain evidence to the reader which may enable him to conclude that the current concepts regarding the circulation are the product of several noteworthy historic personages living in different eras and in different localities.

According to recent disclosures, the first recorded concept of the pulmonary circulation was that of a famous Arabian physician, Ibn an-Nafis (circa 1210-1288 A. D.). The important information which he contributed became available largely through the recent researches of Meyerhof and of Haddad and Khairallah. Meyerhof learned that a young Egyptian physician, Muhyi ad-Din at-Tatawi presented a thesis on Ibn an-Nafis for his doctorate degree before the Medical Faculty of Freiburg in 1924. This thesis was not published and in all probability would have remained in obscurity had it not been for the interest and continued investigations of the three aforementioned medical historians.

Ibn an-Nafis will be discussed more fully than the other contributors owing to the relatively recent appearance of information concerning him in historical writings even though he is the most ancient of all. He was reared in Damascus but no information is available regarding his parents, his childhood or his early education. Ibn an-Nafis studied the medical sciences under the brilliant teacher and scholar, Muhadhdib ad-Din 'Abd ar-Rahim ibn 'Ali.

Ibn an-Nafis was said to have been a tall man of slender stature, dignified, polite, austere and refined. The biographies of this man, according to Meyerhof, indicate that he was a master of the art of healing and that he had no peer in the acuity of his investigations. He remained unmarried and devoted most of his time to study and writing. Ibn an-Nafis was a prolific writer and did not confine his writing to medical subjects but also wrote extensively on logic, philosophy, theology, jurisprudence, applied law, the Arabic language, tradition and rhetoric.

As was the custom of the day, Ibn an-Nafis wrote numerous commentaries on the works of others but, in addition, wrote three books on medicine. "Kitab ash-Shamil fi't-Tibb" (The comprehensive book on medicine) was an extensive encyclopedia which was never completed and no copy of this work is known to exist today. Another work, "Kitab al-Muhadhdhab fi'l-Kuhl" (The well-arranged book on ophthalmology), is also nonexistent but references to it were found in later works on the subject. The third book, "Kitab al Mukhtar min al-Aghdhiya" (The choice of aliments) was said to be of relatively little importance. A manuscript of this work was known at one time to be in the Berlin State Library.

Ibn an-Nafis' most important work was his commentary on Avicenna's (Ibn Sina; 980-1037) "Sharh Tashrih al-Qanun li-'bn Sina" (Anatomy) because this document contained the first known description of the pulmonary circulation. The exact time of its inscription is not known but Meyerhof believes it to have been about the

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middle of the thirteenth century. At least four manuscripts of this voluminous work have been preserved. Ibn an-Nafis' manuscript, therefore, antedates Servetus' work by approximately three centuries.

Ibn an-Nafis' conclusions regarding the pulmonary circulation were based on indirect observation, speculation and remarkably correct deduction. In the preface of the commentary he stated that the prevailing religious laws and his own innate charity had prevented him from performing anatomic dissections and therefore, he was obliged to study the forms of anatomic structures from the works of others, especially those of Galen. Galen's concepts regarding the heart and circulation were fallacious but were generally accepted as being true for nearly fourteen and a half centuries.

It is most plausible, as contended by Temkin, that Servetus' conclusions regarding the pulmonary circulation were original, for it would have been an unusual coincidence for him to have known of this earlier work. The separation in the space of time by nearly three centuries, the widely separated geographic localities and the great differences in language, strongly support the contention that Servetus was entirely unaware of Ibn an-Nafis' contribution.

Ibn an-Nafis described the pulmonary circulation five times in his "Commentary" and discussed the general physiologic principles of respiration. Man was classified as an air-breathing creature in whose lungs the blood was aerated. He mentioned the alveoli of the lungs which were first actually demonstrated by Marcello Malpighi in 1660.

The following quotations from Ibn an-Nafis' work in translation from Meyerhof's article are of importance: "Therefore, *the blood,* after having been refined, *must arise in the arterious vein to the lung in order to expand in its volume and to be mixed with air* so that its finest part may be clarified *and may reach the venous artery in which it is transmitted to the left cavity of the heart."* Disclaiming Galen's false concept regarding the existence of invisible pores in the ventricular septum, Ibn an-Nafis stated: *"But there is no passage between these two cavities;* for the substance of the heart is solid in this region and has neither a visible passage, as was thought by some persons, nor an invisible one which could have permitted the transmission of blood, as was alleged by Galen." Ibn an-Nafis also stated that the heart was nourished by its own vessels and in this statement at least implied a very early concept of the coronary system.

Ibn an-Nafis' important contribution was, beyond dispute, the one outstanding highlight in the medical accomplishments of the Medieval Era and, owing to its relatively recent disclosure, merits emphasis in historical documentation dealing with the circulation.

The life of Michael Servetus (1509-1553) of Villanueva de Sigena, Spain, has received considerable historical comment and therefore a full account of his tragic existence and death would entail much repetition.[4,9] He was a self-styled theologian, in addition to being a physician, an author, a linguist and a translator, and his religious rebellion found expression during the troubled years of the Reformation.

Servetus was judged to be a heretic by many of his contemporaries and he acquired more enemies than friends. The accusations of heresy were based on the confused and bigoted religious doctrines of his day and his ideas concerning religion certainly would not be considered heretic according to modern, or even semimodern, religious standards. Nevertheless he was convicted of heresy at the insistence of Calvin after an unfair trial, met his death on the pyre after having experienced many humiliations and cruel suffering and became one of medicine's first and most prominent martyrs.

The description of the pulmonary circulation by Servetus was embodied in his famous, controversial, religious work "Christianismi Restitutio" which generally was presumed to have appeared first in 1553. However, Mackall found evidence that this work was written and in circulation by 1546. The "Restitutio" in essence was a disquisition of Servetus' religious philosophy and an outspoken criticism of prevailing theologic views. His description of the pulmonary circulation was used only to illustrate and emphasize a point in discussing the nature of the Holy Spirit. Servetus described the circulation of the blood from the right chambers of the heart through the vessels of the lungs where it was mixed with the air and thence back to the left chambers of the heart. This was his only important medical contribution.

Thus, two entirely unrelated discoveries dealing with the basic and correct concept of the pulmonary circulation are now known to exist in early medical annals. The first occurred approximately in the middle of the thirteenth century and the second, approximately three centuries later. Each contribution, without a doubt was original and Ibn an-Nafis' discovery in no measure detracted from the importance of Servetus' later work.

An Italian anatomist of the Renaissance who described the pulmonary circulation almost correctly deserves mention. He was Matteo Realdo Colombo (Columbus; 1516?-1559) of Cremona, who became Vesalius' (1514-1564) successor at Padua.[2,5] In his work, "De re anatomica," published in 1559, Colombo described the pulmonary circulation but did not explain the details correctly because he accepted certain beliefs of the ancients. He held the view that the veins carried the nutritive blood throughout the body and he also perpetuated Galen's fallacious idea that the liver was the central organ of the cardiovascular system.

By means of vivisection, Colombo demonstrated that the pulmonary veins contain blood but held the erroneous belief that the blood becomes cooled during the process of respiration. He, however, disagreed with Galen regarding the mythical notion that the ventricular septum contains invisible pores and in discarding this belief, Colombo was enabled to understand the general scheme of the pulmonary circulation.

Colombo's work appeared six years after the death of Servetus and some historians are of the belief that Colombo plagiarized the work of the martyr. Colombo was also accused of plagiarizing Vesalius' "De fabrica humani corporis," which was published in 1543. He imitated the title page of Vesalius' work and utilized so many other characteristics of "De fabrica" that from the records of history it has been impossible to clear these suspicions.

Still another important contributor to the discovery of the circulation was the celebrated Italian anatomist, Andrea Cesalpino (1519 or 1524-1603), professor of medicine at Pisa and physician to Pope Clement VIII. Cesalpino's first published work which contained a description of the circulation appeared in the volume "Peripateticarum quaestionum Libri V," which also contained discussions of a philosophic nature. It was published in Venice in 1571 and again in 1593. It is stated, however, that Cesalpino used the term "circulation" in its physiologic sense as early as 1559. Thus, his first publication with reference to the circulation of the blood preceded Harvey's work by fifty-seven years.

For many years a bitter controversy has been waged among medical historians regarding Cesalpino's priority and his rightful place among the discoverers of the circulation. The Italian historians have been particularly irate, not without considerable justification. It is not my desire to enter this controversy but rather to present historical evidence which supports the Italian side of the argument. In a recent interesting and important monograph, Arcieri, who asserts that he has read and studied all the Cesalpinian works carefully, brings forth convincing evidence that Cesalpino had comprehensive knowledge of the circulation. The records of history undisputedly prove the priority of the publication. Corwin, in a relatively recent publication, also emphasizes the importance of Cesalpino's work.

It is important that the following evidence clearly presented by Arcieri be examined carefully. Cesalpino observed the difference in both the structure and the function of the pulmonary artery and vein. His observations also contained a description of the origin, course and size of the aorta and vena cava and the recognition of a difference in the structure of arteries and veins in general. Cesalpino explained that communications exist between the portal veins and the vena cava, he observed the reciprocal relation of cardiac contraction and vascular dilatation, and predicted that an anastomosis (capillaries) exists between arteries and veins. When these various observations made by Cesalpino and his use of the term "circulation" are considered it would be strange if this learned physician had not himself integrated these various observations and understood at least the general scheme of the circulation of the blood.

In 1628, William Harvey (1578-1657) of Folkestone and London, published his famous "Exercitatio anatomica de motu cordis et sanguinis in animalibus.[11,12]" Notes made by Harvey as early as 1616 which are in the possession of the British Museum indicate that even at that time he possessed a clear understanding of the structure and function of the heart and circulation.

It is not known whether Harvey knew of Cesalpino's work. Cesalpino is not mentioned in

Harvey's disquisition while frequent reference is made to Galen, Aristotle, Fabricius and others. Harvey studied at Padua from 1600 to 1605 and during the first three years Cesalpino was still alive. Harvey studied anatomy under the celebrated Hieronymous Fabricius of Aquapendente and it would seem strange if this learned teacher was not acquainted with the writings of a native contemporary in his own field. If Fabricius knew of Cesalpino's work it would seem stranger yet if he had not imparted this knowledge to his students. The problem of language was no barrier to Harvey because he was unusually proficient in the knowledge and use of Latin and his monumental work appeared in faultless Latin. The important question of whether Harvey knew of Cesalpino's work may always remain unanswered.

Harvey's work was not accepted universally by his contemporaries so it is little wonder that the earlier contributions of others failed to either interest or instruct the medical profession of his time. Such celebrated contemporaries as Riolanus, Gassendi and Wormius refused to accept Harvey's clear exposition which was based on dissections, vivisections, observations and lucid reasoning. As already emphasized, the fallacious teachings of Galen endured for nearly fourteen and a half centuries and so deeply were they impressed on physicians that unprejudiced, clear vision regarding the new and correct ideas seemed impossible. Riolanus is credited with the statement that if dissections and observations disagreed with those of the great Galen, then any discrepancies should be attributed to the fact that nature had changed since the day of the great master.

At this point of this commentary it is appropriate to reiterate the generally accepted concepts regarding the heart and circulation which prevailed at the time of Harvey. Earlier physicians accepted the belief that a movement of the blood occurred but, like Galen, they believed that this movement took place in the veins by a process of ebb and flow. Some still held the view that arteries contained air (spirits) while only the veins contained blood. Circulation of the blood had not been universally understood, although as previously pointed out, the general scheme of the circulation was certainly known by Cesalpino. The liver, rather than the heart, was considered to be the central organ of the cardiovascular system, and it was in the liver that the production of blood was said to occur. The prevailing idea was that two kinds of blood were present; one kind flowed from the liver to the right chambers of the heart and to the lungs and then returned to all parts of the body by the veins; the other kind flowed from the left chambers of the heart to the various parts of the body by means of the arteries. One of the crucial fallacies of Galen's beliefs was that invisible pores existed in the septum of the ventricles. Hence, a small amount of blood from the right ventricle was permitted to trickle through to the left ventricle. No definite knowledge of the heart as a propulsive organ designed for the conveyance of blood from the heart and ultimately back to the heart was extant. It was even debated whether the heart is muscular and it was not until 1664 that Niels Stensen (Nicholas Steno; 1638 to 1686), definitely proved that it is. The early physicians considered the pulsations of the heart and arteries to be the result of the alternate contraction and expansion of the air (spirits).

Harvey's exposition was clear, convincing and based on actual proof and offered an intelligible explanation for those who were willing to accept new ideas. His proof was perfect and his disquisition appeared in an era of greater medical enlightenment so that its universal acceptance was only a matter of time. These have been the factors which have stamped this great Englishman as the discoverer of the circulation.

Harvey proved that contraction, not dilatation, of the heart is synchronous with the pulse, that contraction of the ventricles squeezes out the blood and propels it into the aorta and pulmonary artery, that the expansion phase of the pulse is produced when the arteries become filled with blood, that no invisible pores exist in the septum of the ventricles (also proved by several predecessors) and that the only means whereby blood from the right chambers of the heart can reach the left chambers is through the pulmonary circulation. Harvey completed his description of the circulation of the blood when he stated that blood from the left side of the heart is conveyed by the arteries, reaches the veins by small communicating vessels (capillaries) and is then returned to the heart. He could not visualize the small communicating vessels but he postulated

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DUODENAL DIVERTICULUM

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IN an effort to emphasize the importance of duodenal diverticulum, the writer has undertaken to report a case of his own, to review similar cases from the records of local hospitals, and to call attention to the symptomatology and surgical treatment.

In 1710, Chomel first described duodenal diverticulum in a woman dead from apoplexy. The diverticulum contained twenty-two gallstones. Case described it first from the x-ray standpoint in 1913, while Forsell and Kay described the first surgical treatment for it in 1915.

Incidence

In one of our x-ray departments in Duluth, duodenal diverticulum was noted forty times in 1,744 gastrointestinal studies (2.3 per cent). At Stanford University Hospital, during 6,000 gastrointestinal roentgen examinations, it was noted seventy times (1.16 per cent). This is not common, to be sure, but at the same time is not a rarity.

The roentgenologist during gastrointestinal studies not infrequently observes and makes notes of duodenal diverticulum but more often coincidently with other intra-abdominal findings, such as gall-bladder abnormalities, peptic ulcer, carcinoma or other epigastric disorders. Occasionally, duodenal diverticulum stands alone as the single finding to account for the patient's symptom-complex.

Its clinical importance is perhaps not sufficiently recognized. Undoubtedly, many diverticula exist without causing symptoms. Many, unsuspected before death, have been found at autopsy. A diverticulum, small to begin with, probably does not cause symptoms until it attains a size sufficient to develop retention within or mechanical pressure to adjacent structures without.

What relationship, then, has a duodenal diverticulum to the symptoms of the patient? What should be done if it is decided a relationship exists between the lesion and the complaint? The question of its clinical significance has formed the basis of much discussion during the last decade. Groups of cases are being reviewed in the literature, and experiences compared, in a constructive effort to command more exactness. No doubt operations have been done for gall-bladder disease or ulcer when, in essence, a missed diverticulum was at the root of the patient's trouble. Beals, in a study of forty-one cases of duodenal diverticulum seen in his x-ray work, found that about 36 per cent had received surgical treatment for gall-bladder disease or had x-ray evidence thereof.

Diagnosis begins with a careful review of the patient's history, his complaints and the length of time involved. The following case is presented.

Case Report

A man, aged fifty-seven, a construction worker, presented himself complaining that for the past two years he had had epigastric distress after eating, which had been gradually becoming worse. It seemed to him to be gas pressure, for he obtained some relief by belching. Some foods distressed him more than others. Onions, potato chips, cabbage or fried foods were the worst offenders. The distress seemed worse at night. No relief was obtained by taking milk or alkalis, and he found no food which relieved the burning and boring pain. He had experienced no hematemesis or bloody stools. He had lost about ten pounds in weight in the preceding eight months.

On examination he was found to be a man of strong muscular build. Heart and lungs were essentially normal. The blood pressure was 120/80 and his pulse was 68. No tenderness was elicited over the epigastrium or elsewhere in the abdomen, and no mass was palpated. There was a small reducible left inguinal hernia. The extremities were not abnormal. Laboratory findings included essentially normal urine, a hemoglobin value of 89 per cent, erythrocytes numbering 4,640,000, and a white blood cell count of 7,850.

The x-ray studies of the gall bladder and gastrointestinal tract revealed (Fig. 1) "a poorly functioning gall bladder, no evidence of stones, and a negative stomach and duodenal cap. A diverticulum of the second portion of the duodenum was demonstrated, which had an area of decreasing density due either to retained food from a previous meal or to a polypoid growth within the diverticulum. It should be kept under observation, especially if there is blood in the stool, and the advisability of surgery should also be considered in view of these findings. A single film of the abdomen, forty-eight hours after ingestion of the barium meal, shows no evidence of any barium remaining in the diverticulum. Most of the barium has been expelled."

Presented before the Duluth Surgical Society December 26, 1946.

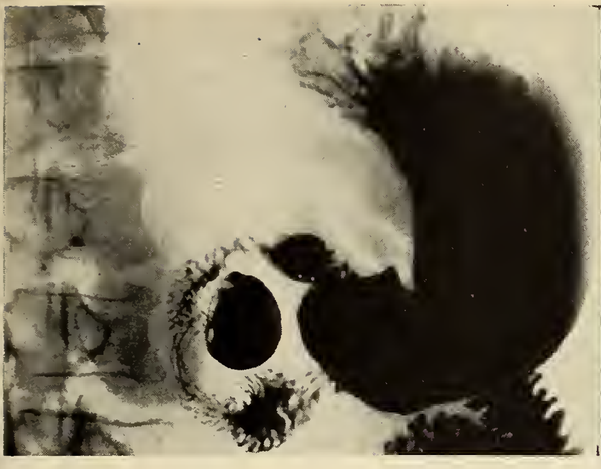

Fig. 1. The x-ray shows a normal stomach and duodenal cap with a large diverticulum of the second portion of the duodenum.

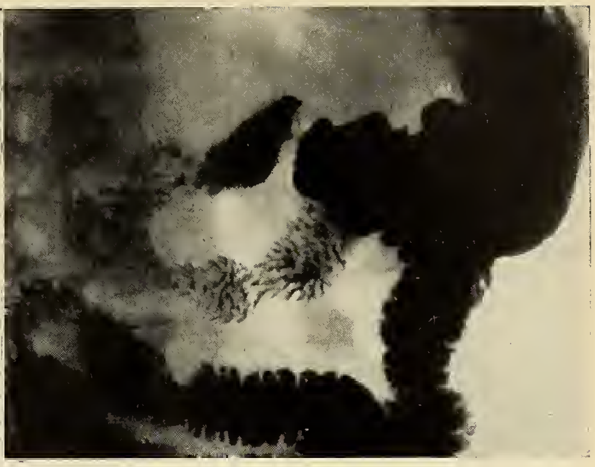

Fig. 2. This x-ray, taken six months after the removal of the duodenal diverticulum, shows a normal appearing duodenum.

In the absence of positive diagnostic findings to account for the man's persistent complaints, aside from the diverticulum, exploration was advised. At the operation, there was found a soft gall bladder and no palpable lesion of the stomach. After considerable search in the second portion of the duodenum, the sac of the diverticulum was found posteriorly. It was rotated anteriorly, clamped at its neck, and removed with a cautery. The stump was sutured and then overcast with interrupted silk sutures.

Postoperatively, a naso-gastric tube was used for decompression of the stomach. A transfusion of 500 c.c. of whole blood was given, supplemented by saline with glucose or by distilled water with glucose. On the fourth day the naso-gastric tube was discontinued, and water in small amounts was allowed by mouth.

The laboratory reported the diverticulum to be lined with normal mucosa without significant inflammatory change.

The man took a vacation and at the end of eight weeks returned to his regular duties. He has worked steadily up to the present time, about six months after the operation. He feels fine, has no pain, and his old trouble has ceased. He is on an unrestricted diet without discomfort. He has gained 20 pounds in weight. An x-ray check-up and report six months after operation was as follows (Fig. 2): "Films of the stomach following the ingestion of the barium meal show the stomach and duodenal cap to be within normal limits. The large diverticulum of the second portion of the duodenum has been resected and the duodenum appears to function normally."

Review of Cases

If it is true, as has been stated, that diverticulosis is noted on roentgen examination with relative frequency, we are faced then with the problem of sorting out and fixing our attention upon those cases in which a duodenal diverticulum is accountable for symptoms disabling to the patient. These diverticula are not all harmless by any means. Malignancy, ulceration, and perforation of a diverticulum have been found to be serious complicating factors. A case of spontaneous rupture of a duodenal diverticulum was described by Beaver in 1938, and similar episodes were described by Boland and Monsurrat. Gallstones have been found within a diverticulum. Hare and Cattell discuss the subject of duodenal diverticulum simulating gall-bladder colic. Sinister factors, therefore, are sometimes linked with this condition, and a differentiation is called for.

Twenty-three cases of duodenal diverticulum have been collected from the records of St. Luke's and St. Mary's hospitals in Duluth, and these involved thirteen males and ten females. There was one child, three years of age, who on x-ray examination showed a diverticulum of the second portion of the duodenum. The rest of the patients ranged in age from thirty-seven to eighty-eight years. Twenty of the twenty-three patients were fifty years of age or older. Ten were over sixty years of age. The overwhelming majority were in the older age group.

Nineteen of the twenty-three patients complained of epigastric pain. Of the remaining four, one patient, aged fifty-one, had aching pain in the left chest and left upper quadrant, worse after eating, with a history extending back fifteen years. The x-ray study was not typical of ulcer, and the patient was not treated surgically.

One patient, aged seventy, had sharp pain in the upper right quadrant, and the history extended back many years, with nausea and vomiting and diarrhea by spells, and with weight loss. X-ray examination showed a duodenal diverticulum in the second portion. The patient was not treated surgically.

One patient, aged seventy-eight, had constant severe pain in the umbilical region for a period of one month, with tenderness, vomiting and loss of weight. X-ray showed a duodenal diverticulum in the first portion. No operation was performed. At autopsy, cholelithiasis and carcinoma of the pancreas were found.

The fourth case without epigastric pain was that of the child referred to above.

As to the nature of the pain, three patients complained of burning pain, three of cramp-like pain, three of sharp pain, and seven of dull aching discomfort. Gas was mentioned as distressing in nine cases, and bloating or fullness in six cases. In eleven cases, the history extended back one year or more. In nine cases, the history extended back "for years." One patient, a man, seventy-two years of age, had attacks for thirty-five years of epigastric burning pain and, at times, nausea, vomiting and constipation, but no local tenderness. On x-ray examination a large duodenal diverticulum was visualized, and six-hour retention was observed in the diverticulum. No operation was done. This was the longest history in the group.

Fifteen of the twenty-three patients had tenderness in the epigastrium. One of the fifteen, a man aged sixty-seven, stated the right upper quadrant was the site of his tenderness. He was an obese miner who was admitted for cardiovascular disease, but who on gastrointestinal study showed a duodenal diverticulum. On the other hand, one man of sixty, had no complaint of tenderness but had epigastric distress. His x-ray study revealed a normal gall bladder and a diverticulum in the second portion of the duodenum with six-hour retention. He stated that Sal Hepatica made his pain worse. No operation was done.

Nausea was listed in the group ten times, and vomiting eleven times. Five of the eleven had intercurrent conditions, such as gallstones, ulcer, or carcinoma, as complications.

The diverticulum was localized by x-ray in the first portion of the duodenum in two instances. One of these two patients also had a carcinoma of the pancreas, and the other had had multiple operations on the stomach. The diverticulum was found in the second portion of the duodenum in nineteen cases. When the third portion was involved, the diverticula were multiple. There were three of these, one in a diabetic with cirrhosis and cardiovascular disease, one associated with an inoperable carcinoma of the pancreas, and one with diverticula also in the second portion. In five cases, cholelithiasis was a complicating factor found either at operation or on x-ray report.

Operation was done to ablate the diverticulum in three of the twenty-three cases. One has been described in the case report. One diverticulum, 3.5 cm. in diameter, was clamped, removed, and the stump inverted. X-ray follow-up showed a good result. The third was located in the region of the ampulla close to the ducts and was turned in by plication. X-ray follow-up in this case also showed a favorable result.

Etiology

In Guys Hospital reports of 1893, Perry and Shaw were of the opinion, as quoted by Edwards, that the pylorus is largely responsible for a rise in pressure within the duodenum. That is to say, when there is a peristaltic contraction in the lower duodenum with the pylorus closed, there is produced an abnormal pressure within the intervening loop. Weak areas in the wall, therefore, may be subjected to greater pressure than they can withstand, and a point of local dilitation results. Adhesions and traction in some instances seem to play a part in causation.

Symptoms

Prominent in the symptoms outlined by Edwards and quoted by Nagel is flatulent dyspepsia of a vague type, with a sense of oppression in the epigastrium. The histories often run back many years. There is a dull distress or a burning sensation in the epigastrium frequently following food ingestion. Nausea and vomiting may be accompanying symptoms, with relief of distress. Pearse observed that if there is retention in the diverticulum and at the same time local tenderness, the diverticulum is probably the cause of the patient's symptoms.

Diagnosis

The duodenal diverticulum can be demonstrated by x-ray, and the roentgenologist therefore pronounces the ultimatum. The location of the diverticulum, as to its position in the first, second or third portion of the duodenum, can likewise be stated by the roentgenologist. The size of the diverticulum also should be noted, inasmuch as the large pouches cause most symptoms. A six-hour film to detect retention in the diverticulum is valuable. The presence, location, size, and six-hour retention of a duodenal diverticulum are, therefore, valuable points of interest to the surgeon.

Surgery

These diverticula are not easy of access to the surgeon. Those in the first portion are rare and are most likely the ones removed at the time of pyloric resections or are the ones which become symptomless thereafter. Those in the second portion are the most common and are the ones which may cause difficult surgical problems.

Lawson found that, of fifteen cases in which there was exploration of the abdomen, the surgeon did not attempt to locate the diverticulum in seven because of other findings regarded as the cause of symptoms. In eight cases where search was made for the pouch, it was found in six. Lahey states they have learned from experience that those diverticula which burrow into the head of the pancreas can be dissected only with the greatest difficulty. Pearse describes a method whereby he slits the diverticulum in order to insert the finger into it and thus help in the dissection, and he uses strong illumination to be sure the common duct and pancreatic duct are avoided. Neil MacLean opened the duodenum and through this opening inserted a finger into the diverticulum to aid in separating it from the pancreas. Nagel believes these diverticula should be resected and not inverted. One has to contend with the fact that these pouches may be collapsed when the surgeon is searching for them, which adds to the difficulty of locating them. Those diverticula beyond the second portion are more easy of access and may often be approached from below near the ligament of Treitz.

Prognosis

While few of these diverticula require operation, it is encouraging that 80 per cent of those treated, according to Morton, are relieved of their symptoms. Beals makes the significant statement that if duodenal diverticula were as accessible to the surgeon as is the appendix, we should soon learn more exactly the relationship between these pouches and the attendant symptom-complex.

Summary

Surgical treatment is indicated for a small percentage of duodenal diverticula. The larger ones are the chief offenders. Their clinical significance should be given careful consideration. If a duodenal diverticulum is associated with a diseased gall bladder or a peptic ulcer, it should be evaluated as to its possibile contributing nature in the patient's complaint.

The author reports a case treated, and twenty-three hospital cases reviewed, most of them in the age group over fifty. Three were treated surgically with good results. In the roentgen study, the presence, location, size, and six-hour retention are important. The surgical experience of various authors is herein discussed. The prognosis is encouraging unless serious complications exist.

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The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.—*Constitution of the World Health Organization.*

OFFICE PROCTOLOGY

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THE scarcity of hospital beds and the insistence of patients who have no time to stay in hospitals have combined to persuade us to undertake an increasing amount of rectal surgery in the office. Our methods of rectal treatment for ambulatory cases, and a new needle for retrograde injection of combined hemorrhoids, were presented to the Upper Mississippi Medical Society, May 11, 1946. Credit should go to Drs. Buie and Smith of Rochester, Drs. Fansler and Anderson of Minneapolis, and Dr. Frank Yeomans of New York, whose techniques have been modified to suit our purposes. These gentlemen have courteously entertained me at their clinics, and their publications have been freely consulted.

The rectal mucosa ends at the pectinate line which is marked by the anal papillae, the pointed upward extensions of the anal skin, above which extend the columns of Morgagni and between which lie the pockets of the anal crypts. Innervation above this line is autonomic and insensitive to ordinary pain stimuli. The skin below this line is supplied by peripheral nerves and is exquisitely sensitive. Branches of the internal pudendal nerve leave Alcock's canal as it crosses the obturator internus muscle just above the ischial tuberosity, and course medially through the ischiorectal fossa to supply the anal skin and the external sphincter. This makes it possible to anesthetize the anus by a nerve block, using the tuberosity as a landmark. As this does not block the autonomic supply of the internal sphincter it is also necessary to infiltrate, fanwise, on both sides of the sphincter in cases requiring complete relaxation. This thickened terminal portion of the circular muscularis of the rectum is in constant tone, except when reflexly relaxed during defecation peristalsis, and is aptly dubbed the "responsible" sphincter, in contrast to the external or "social" sphincter, loss of whose voluntary control results in musical and olfactory phenomena at embarrassing moments.

Rectal treatment must be preceded by a complete history and physical examination, with routine check on blood and urine. Carelessness in this respect saves no time in the long run, but invites disaster for the patient and embarrassment to the surgeon. It is not pleasant to discover rectal carcinoma in a patient who continues to bleed after his piles have been eliminated, or diabetes in a woman whose pruritis was not alleviated by injection treatment, or tuberculosis in one whose fistula has recurred. The treatment of piles by any method in the presence of a cirrhotic liver or an obstructing pelvic tumor is a light occupation. They will promptly recur.

The next step is always a careful digital and proctoscopic examination. Most rectal carcinomata can be felt with the lubricated finger, and all lesions below the sigmoid flexure can be seen through the proctoscope. Proctoscopy can be done on any examining table by using the knee chest position. The scope is introduced past the sphincters with the obturator in place. When the obturator is removed and replaced by the light, the rectum will balloon up as a result of the vacuum created by the falling toward the diaphragm of the abdominal viscera. This is safer and simpler than bulb inflation, which is seldom necessary. Next the instrument is gently advanced, under direct vision, past the valves of Huston and the rectal ampulla, to the terminal sigmoid. Although any lesion may be seen during introduction, a systematic inch-by-inch survey of the entire circumference is made as the instrument is withdrawn. Long applicators are used to wipe away any flecks of blood, stool or mucus, as these cling more readily to diseased portions than to the normally smooth and slippery mucosa, and may conceal the very lesion being sought. Biopsy may be taken with alligator forcepts or the diathermy loop. Bits of loose tissue are picked up on a wet applicator. Bleeding may be controlled by fulguration, applied with discretion to the anterior rectum above the cul-de-sac, where perforation can open the peritoneal cavity. X-ray examination of the rectum is superfluous and futile, but it is still our best means of visualizing the rest of the colon.

Our patients are told that piles are caused by standing upright on their legs. Since there are no valves capable of supporting the vertical column of blood in the erect trunk, the greatest pressure falls on the veins in the lower rectum.

The straining and milking down effect of passing hard stools blows up the weaker veins into bulbous varicosities, which are piles. This explanation promotes an understanding of the need for periodic checkup to catch recurrences in their early stages, and encourages co-operation in the establishment of proper bowel habits. The loose areolar tissue, containing the venous plexus, beneath the rectal mucosa permits this lining to move freely during defecation. If a large varicosity is extruded beyond the sphincter, it may be prevented by spasm from retracting. Venous return is shut off, and passive congestion is followed by edema, extravasation and painful inflammation, and there results a prolapsed thrombosed internal hemorrhoid. In combined piles, where the varicosities extend beneath the pectinate line into the subcutaneous fat, the thrombus may extend into the external portion.

Prior to thrombosis, the complaints are bleding, protrusion, an aching but not severe pain, or a continued sense of fullness after defecation. The piles are better seen than felt, as submucous varicosities just above the pectinate line which elevate the mucosa into pink to purple, soft, bulbous masses which bleed easily on abrasion.

Piles are best treated by injecting 5 per cent quinine and urea hydrochloride in 2 per cent procaine into the loose areolar tissue surrounding the varicosity, not intravenously. Enough solution to distend the pile, without blanching, is injected, usually 1 or 2 c.c. into each of one or two hemorrhoids at a session. The pile is engaged in a Hirschman speculum, wiped clean, painted with antiseptic, and the solution injected through a tonsil needle on a Luer-Lok syringe. Much smaller amounts of 5 per cent phenol in cottonseed oil are used in patients who react unpleasantly to quinine. The effect is to tighten up the areolar tissue through fibrosis, thus obliterating or supporting the veins and also fixing the mucosa more tightly to the muscularis, an effect which finds its further application in the similar treatment of mucosal prolapse.

External piles are not injected because they are not troublesome, unless thrombosed, and because injection through the perianal skin is a very painful procedure. Their management calls for an occasional incision to shell out a thrombus, or the clipping off of a residual skin tag.

Combined piles may be injected with a retrograde needle (Fig. 1). These needles were first made to the authors specifications by V. Mueller of Chicago, in 1942. Subcutaneous varicosities may be as successfully treated as those beneath the mucosa. Tissue reaction to quinine and urea hydrochloride is the same. The oily solution has not been used in the subcutaneous fat for fear of fat necrosis. Injection of external piles has never become popular because of the pain incident to transcutaneous injection. The retrograde needle was designed to meet this objection. Using a side-slotted speculum of the smaller Fansler type, the needle is introduced, retrograde, into the hemorrhoidal mass above the pectinate line. This muco-cutaneous junction is freely mobile over the varicosity, which extends beneath it under the perianal skin. The submucous portion is first distended, then the needle is advanced outwardly, blowing up the tissue space beneath the crypts and papillae as it progresses into the subcutaneous portion of the pile, and finally injecting there a quantity sufficient to distend moderately the external portion of the hemorrhoid One must be careful not to puncture the skin or to raise an intracutaneous wheal, as this will result in the painful reaction the technique is planned to avoid. When the injection is completed, the needle is pushed back into the rectum to disengage the point, keeping the needle in the slot and the speculum farther within the rectum than the needle point. The point is then rotated away from the slot, where it may be easily withdrawn without hooking up the mucosa.

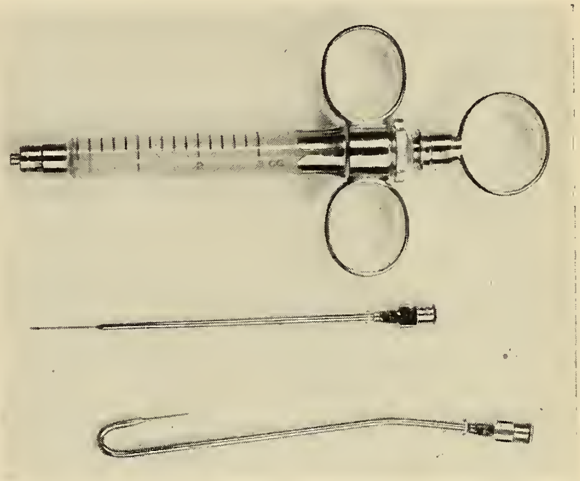

Fig. 1. Syringe and retrograde needle for injecting external hemorrhoids.

A thrombosed pile may be easily treated in the office under procaine block. If the sphincter is adequately relaxed and dilated, a speculum is rarely needed. The thrombosed mass is grasped at its upper pole with Ochsner Forceps, pulled down, and a ligature of fine chromic gut is passed through the mucosa and about the submucous vessels just above the proposed site of excision. This suture is tied and left long. It should include all the tissue down to the sphincter but should not bite into the muscle. An ellipse of mucosa is excised, extending from just below the ligature, over the clot, to the perianal skin just without the anal verge. This extension is important, as it insures drainage and guards against the formation of infected pockets, perianal abscesses and consequent fistulas. The thrombus is cleaned out, the wound sprinkled with sulfonamide, and the long end of the ligature continued downward as a hemostatic, locked suture, closing the wound to the anal verge but leaving the lower end wide open. A vaseline gauze strip is placed over the wound and secured by tying it into the ends of the ligature. There is usually no difficulty with bleeding, but if any spurting vessels are encountered they should be separately secured by mattress ligatures before starting the closure. This avoids the accumulation of a hematoma which could be more distressing than the original thrombus.

The patient cleanses the anus with soapsuds after each stool and applies an external dressing of sulfathiazole ointment. Hot sitz baths alleviate postoperative distress and promote clean healing. On the third day, if there has been no stool, an oil enema is given. The gloved finger is inserted, the wound cleansed, loose sutures removed, and the wound painted with gentian violet. This is repeated twice weekly till healing is complete, usually in about three weeks. The remaining piles are injected during this healing period. Usually no sedatives or anesthetic ointments are required. Mineral oil is seldom used, as the dilating effect of a soft, formed stool is desired. A pint of water before breakfast and a regular morning stool habit are insisted upon, supplemented at times by such a bulk and jelly producing preparation as agar, psyllium or karaya. Any residual varicosities are treated after a month's interval, and a final checkup after six months advised.

Rectal fissure should be suspected whenever painful defecation is followed by a severe, toothache-like pain. The tormented victim postpones the ordeal until the stool is inspissated and impacted, when, finally, its passage is forced by a cathartic or an heroic effort. These diamond-shaped ulcers are usually found between an external skin tag, the socalled "sentinel pile," and a hypertrophied papilla at the posterior anal margin. The older ones are indurated, all bleed easily on abrasion, and their pink, inflamed floors are covered with a yellow, viscid exudate, unless it has been wiped off by a recent stool. Sphincter spasm is so marked and sustained as to make proctoscopic examination impossible without anesthesia. Even digital examination may be an agonizing ordeal. A cluster of submucous varicosities is usually found just above the enlarged papilla. The stubborn persistence of these ulcers in the presence of hemorrhoids suggests comparison with varicose ulcers of the leg. Permanent healing is more likely if the piles are eliminated. Fissure occurs most often at this site because the shelving forward of the posterior rectal wall directs the impact of the descending stool against the least elastic portion of the circumference, where the decussating fibers of the sphincter are firmly attached to the fibrous coccygeal tendon.

Many recent rectal abrasions heal with no treatment. A few recent fissures have healed after digital stretching and the application of silver nitrate. Few patients will permit such treatment in a well-developed fissure. The first essential in proper treatment is to secure sustained anesthesia and relaxation. One per cent Diothane or such an oily anesthetic as Zylcaine is used to block the sphincter on both sides. The sphincter is gently and gradually stretched as it relaxes, taking care to tear neither muscle nor mucosa. Mucosal lacerations and extravasations in or about the sphincter cause anal stenosis with consequent persistence of the fissure. The bivalve retractor-type Smith speculum gives adequate exposure. If the fissure is recent, soft, small and elastic, excision is unnecessary. The internal pile above is injected, and the granular, indolent ulcer surface is pooled up to the point of blanching with the same quinine solution with the deliberate intent to produce a superficial slough down to healthy, fresh tissue. The same result may be achieved by diathermy coagulation, but the author prefers to avoid this method. It is very easy to cook the tissues a little too deeply, and a well-baked sphincter tends to be replaced by a fibrous, contracting scar.

If the fissure is large, chronic, or indurated, it should be excised in an ellipse wide enough to include both margins and extending from the hemorrhoid above to just outside the anal verge. The same preliminary ligature and continued suture technique employed in treating thrombosed piles is used, but the dissection must be carried right down to the bare sphincter, where may be seen or felt the so-called "pecten band," an annular zone of fibrosis caused by organization of the inflammatory exudate in the lymph spaces overlying the sphincter. This will not stretch, and must be severed with the scalpel to expose the healthy, meaty and elastic sphincter. The incision is closed to the lower edge of the sphincter, where the mucosa may be tacked down with a pair of interrupted sutures, leaving the lower end open past the anal verge. Dressings and after-care are the same as previously described. One must be particular to maintain dilation until healing is complete. The long-lasting anesthetic may be repeated, if needed, in patients in whom dilation is difficult to maintain.

Fistulas may sometimes be prevented by incising an infected crypt. A bent malleable probe or crypt hook is used to lift up the crypt wall, which is then snipped off under the probe with scissors. A persistent or neglected crypt infection may burrow along the lymphatics to the ischiorectal space, where an abscess forms and is incised, or finally breaks through the skin, establishing a fistulous tract extending from the crypt to the external opening. Early incision is indicated, as it prevents the extensive burrowing which too often results in the extensive, multiple branching fistulas, which are, indeed, a formidable problem. So-called "expectant treatment" entitles one to expect only this unpleasant result. Penicillin in procaine may be used if the abscess is too deep for ethyl chloride refrigeration. Drainage is better promoted by cutting off a corner of a crucial incision than by insertion of a gauze pack. A single strip of vaseline gauze may be inserted to the bottom of the abcess cavity. The finger should be inserted to feel out and break down any loculated pockets. The patient should be told that only the first part of a two-stage operation has been performed. Bleeding and the spread of infection are minimized if incision of the entire tract is delayed until inflammation has subsided and the wound contracted. Hot sitz baths are used after the first, large post-operative dressing. Meanwhile, sulfamerazine and a daily dose of penicillin in oil are useful. Only the simpler and more superficial fistulas should be treated in the office. If a malleable probe can be guided all the way through the fistula, it can be replaced by a grooved director, and the entire tract laid open by a single, straight incision onto the director. The operation is completed by trimming off the overhanging edges to form a gutter. The wound is sprinkled with sulfonamide and filled with vaseline gauze strips. Frequent dressings prevent bridging over, and must be continued until healing from the bottom up is complete. A straight radial incision through the sphincter is sometimes necessary, and heals without incontinence. Severing the sphincter in more than one place at the same time or cutting it obliquely invites this disaster.

Summary

Simple, proved methods for treating most piles and fissures and some fistulae, in the office by ambulatory methods, are described.

A new needle for retrograde injection of combined piles is presented.

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GETTING THE MOST FROM A PATHOLOGIST

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EVERY year a certain amount of money is wasted on pathologic services. Some think that hospital standards requiring routine pathologic examination of every appendix, gall bladder, and fallopian tube are responsible for a good deal of this waste, inasmuch as the main gain usually is a written report by a disinterested party after the operation has been done. Furthermore, there is little evidence, from the type of tissues submitted for examination, that the certain knowledge of pathologic review acts as a deterrent to surgery. Admitting the questionable need of some of this expense, there is, in addition, a greater and more hidden waste—namely, that the doctor is not always getting the information he could get from pathological examination of his tissues. In some cases, this is due to misinformation from the pathologist but more often to misinterpretation by the doctor.

For example, let us consider the appendix. This vestigial remnant is responsible for a good part of the income of the surgical pathologist, and he sees a good many of them. If a smooth, normal-appearing appendix is submitted to him without a report of the clinical course and the total and differential white cell counts, it is very possible that he will get the impression that the patient may have been operated upon by a hurried doctor. Routinely, he will cut a block or two for the record. When he reviews the microscopic sections and sees nothing unusual, he will have little compunction about making a diagnosis of normal appendix or chronic appendicitis, depending upon the sensitivity of the referring doctor. Whichever diagnosis is made, it is apparent that the intent is to indicate that the operation was, at least, not a medical emergency. However, if the specimen is accompanied by a history of acute onset, rapid progress, and leukocytosis with an increase in neutrophiles, the pathologist will more likely view it with respect in spite of its possibly benign appearance, will choose the sites for his blocks with more care, and, in certain cases, make a smear of the contents of the lumen. He is sensitive about being unable to find disease when there is good presumptive evidence that it is present, but he is calloused to appendices because he sees so many which appear harmless.

A good deal of abdominal surgery has fallen into disrepute with the pathologist. Although he is not a practicing clinician, he has been trained in clinical diagnosis and knows its value. In cases where pathological examination of tissue is not conclusive, he can profitably use clinical facts when making a decision because his record stands, in many cases, as the final diagnosis. To deny the pathologist clinical information is shortsighted. He is usually in a better position to correlate clinical facts with what he sees than is the physician to correlate a description of what the pathologist sees with his clinical finding. That the pathological report is all-important with government agencies and insurance companies in judging the competence of surgical care is, in some circumstances, unfortunate, but the fact remains, nevertheless, that it does hold that position. Apparent discrepancy between clinical diagnoses and pathologic reports is considerable. Even though from 75 to 80 per cent of the inflammatory conditions in the abdomen are due to appendicitis, almost 50 per cent of the appendices submitted for pathologic examination (excluding those removed routinely in the course of other abdominal surgery) are pronounced normal or are given a comforting name. The surgeon can partially correct this discrepancy by being sufficiently specific in his indications for an operation to write them down for the pathologist. Many studies have shown a fair correlation between clinical and pathological data in appendicitis. By making careful clinical records, the operator will seldom have to shrug off a surprise report.

Many uteri are submitted for examination. Those which are normal in size and not accompanied by a clinical history are puzzling to the pathologist. Money is often wasted upon an examination of this type because the surgeon who removes a normal-appearing uterus usually knows more about it than the pathologist who sees it postoperatively. Such an organ should be ac-

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Read before the Upper Mississippi Medical Society at Ah Gwah Ching, Minnesota, October 5, 1946.

companied by a history. To insure complete fixation, it should be opened by the surgeon beforehand so that the endometrium will be exposed to the formalin. It should be incised exactly through the midline from front to back. Larger uteri should also be cut open in this manner, and tumor masses should be incised in order to allow more complete fixation. A history of the reason for removal, unless the pathologic condition is obvious, always brings a more careful examination and a more considered diagnosis.

Nothing seems to provoke more remarks among pathologists than the receipt of corpora lutea as surgical specimens. Sometimes such an object is the only one removed in a laparotomy, probably as a side excursion from a uterine suspension. As we all know, a corpus luteum is physiological and harmless, and is easily diagnosed grossly. It is rounded and firm and sometimes measures more than an inch in diameter. The wall is yellow and sometimes wavy in outline, and the cavity contains bloody fluid. Its removal is a surgical mistake, and its histological examination is a waste of time. The pathologist makes his slide from a small part of it only for the record. Many small, smooth-walled cysts of the ovary are also removed. These are usually harmless. The distinction between follicular, luteal, and endometrial types can usually be made only on histological examination, and sometimes not then.

Occasionally, thyroid glands are submitted for examination. As a result of clinical study of the patient the surgeon usually pretty well knows the nature of every thyroid which he removes, but he is often disappointed by the pathological report. The main reasons for this diappointment are the shortcomings of pathological examination and the usual circumstance that the pathologist does not have the clinical information which the surgeon possesses. If the patient with a diffusely hyperplastic gland and symptoms of hyperthyroidism has been treated with iodine for some time and the symptoms relieved, the gland on pathologic examination may not be diagnostic of past difficulty. Generally, there are remaining foci of lymphocytes, but the epithelial hyperplasia and reduction of colloid so characteristic of Graves' disease may no longer be apparent. Without a clinical history, the pathologist does not always feel justified in making the diagnosis of treated Graves' disease. This is sometimes disconcerting to the surgeon, in view of the incidence of continuation or recurrence of symptoms in this condition. If a patient with a nodular goiter of some years' duration develops symptoms of toxicity and undergoes thyroidectomy, the gland will show mainly its adenomatous character. Histological evidence of toxicity, at best present only between the nodules and further diminished by iodine treatment, is most often absent. This cannot be taken as proof that the gland was not responsible for symptoms. The pathologist usually makes a diagnosis of nodular or adenomatous goiter, without reference to toxicity. By observing the clinical course, the surgeon must settle that question for himself.

Of most direct service to the patient and physician is the correct interpretation of biopsies. The most frequent specimens of this type are uterine curettings. If only a few curettings are present, the diagnostic probabilities lie between incomplete curettage and postmenstrual or senile endometrium. Malignancy is not to be expected in a small volume of curettings. If a great amount is present, the gross conclusion is that either hyperplasia or carcinoma is the likely diagnosis. Microscopic examination is made in every case, but sometimes all fragments are not sectioned. In order to keep the pathologist on his guard the surgeon should make a thorough curettage and submit all of the tissue free from blood. It is much easier to separate the tissue from the blood before the mixture has been put into formalin. Then, if the pathologist receives a large amount of curettings, he will be more on the alert for malignancy. Along with the specimen, the referring doctor should send a summary of symptoms, menstrual history, and, without fail, the age of the patient.

It is not often that a pathologic examination of endometrium gives the reason for uterine bleeding. If a definite cystic hyperplasia or a carcinoma is found, the answer probably lies here. In most cases, however, the endometrium appears normal and is described according to its stage of development in relation to the menstrual cycle—either proliferative, secretory, or premenstrual. If the endometrium is of the secretory or premenstrual type, it may be assumed that the patient ovulates normally and that a corpus luteum has been formed. This knowledge is of some help because anovulatory uterine bleeding is fairly common in the early and latter parts of menstrual life. Most endometrium removed, however, is found to be in the proliferative stage. This is because normal endometrium in women past the menopause is normally of this type, ovulation no longer taking place. A single curettage showing proliferative endometrium in a cyclic woman obviously does not prove anovulatory bleeding. A second biopsy should be taken two weeks later. Cystic and hyperplastic changes occur almost exclusively in proliferative endometrium of women just past the menopause and are signs of prolonged, unopposed estrogen activity.

Decidual transformation of endometrium is sometimes found on histologic examination. If chorionic villi are found with the decidual cells, the diagnosis of intra-uterine pregnancy is established. If chorionic villi are not found, however, evidence of intra-uterine pregnancy is not complete because uterine endometrium undergoes identical decidual change of pregnancy in 50 per cent of cases of extra-uterine gestation. The finding of advanced degenerative changes in decidua, however, points to aborted intra-uterine pregnancy.

Oftentimes the real answer to the problem of uterine bleeding lies outside the endometrium, and the doctor must assure himself that there is no leukemia, purpura, anemia, ovarian tumor or uterine myoma. The question of a submucous myoma cannot be settled by examination of the endometrium, but the operator might be able to feel a projecting fibroid with his curette. An ovarian tumor, especially in obese women, occasionally escapes earnest efforts at detection by pelvic examination and will only be found by laparotomy.

Cervical biopsies are frequently submitted. Accompanying histories should include the age of the patient, notation of previous pregnancies and the gross appearance of the cervix. If the biopsy is made so that a normal portion of mucosa is included, it may be possible for the pathologist to pick up a precancerous or early cancerous lesion where otherwise he might not be able to say. The specimen should be cut deeply enough to include some of the underlying tissue of the cervix so that the degree of epithelial penetration can be determined. It is of great importance that the biopsy be taken perpendicular to the surface, so that the resulting section will show the epithelium in strict cross-section and not obliquely. The possibility of a section of epithelium being oblique is constantly kept in mind by the pathologist when making a decision between malignant and nonmalignant thickening. Oblique sections are sometimes impossible to read reliably.

The decision between when to biopsy and when to attempt removal of a lesion without knowing its nature is important in many instances. In case of a mass in the breast it seems best, as a general plan, to limit initial surgery to its adequate local removal, unless it is obviously malignant. Pathological examination is probably more useful in saving benign breasts than in causing radical removal of malignant ones. There is less harm in leaving an operation temporarily unfinished in the occasional case than in removing an entire breast and possibly doing a radical operation for a few cysts or fibroadenomata. If the removed mass does prove to be cancer, a block dissection can still be done. Before putting such a specimen into formalin it is desirable to dissect the axillary lymph nodes from it. Finding these nodes by palpation is much easier in the fresh specimen than in a formalized one, in which case the fixed fat and the nodes have about the same consistency. Putting these nodes into a little gauze sack will insure pathologic examination of all of them and a much more accurate prognosis.

The diagnostic procedure to be followed in lesions of the lip depends to some extent upon the treatment intended. Small carcinomas are very satisfactorily treated with x-ray or radium, but they should first be biopsied. It is the practice of some men to biopsy without anesthesia, removing only a little epidermis. Unforunately, some of these specimens are not diagnostic because too little dermis is included for estimation of epithelial penetration, and because so little tissue is present that orientation for a truly perpendicular section is impossible. A lip biopsy should be reasonably deep, even though narrow. Since many early lesions might just as easily be removed as biopsied and radiated, it is just as well to dissect these out with normal tissue on all sides and have them examined. If early cancer is present and no cervical nodes are felt, it is permissible to let the matter rest. In case of a large lesion, a biopsy should first be taken. If the report is that of squamous cell carcinoma, a complete dissection of the tumor and of the submental and subaxillary lymph nodes should be carried out.

The failure to biopsy before removal has often been regretted in tumors of the subcutaneous tissue or muscle. All of these masses should be biopsied as soon as discovered. If they are small and discrete, they can be widely removed at the first sitting. If they are large, however, a biopsy should suffice for the first attack. Many tumors thought to be simple fibromas are, in reality, fibrosarcomas or myxosarcomas with a marked tendency for local recurrence. It is more economical of the patient's tissue to do a wide dissection of a large malignant tumor after biopsy than to perform a routine removal with a practical certainty of recurrence if examination proves the presence of malignancy.

Lymph nodes are often submitted for diagnosis. In case of a suspected lymphoblastoma, the doctor should find out the duration of enlargement of the nodes, the location of those enlarged, size of the spleen and liver, width of the mediastinum, presence or absence of pulmonary involvement, and the nature of the blood picture. Sometimes, in a single node there is poor histological distinction between lymphosarcoma, Hodgkin's disease and leukemia. The physician who wants this distinction made should supply the pathologist with all of the information mentioned above. Since there is a certain overlapping of histological as well as clinical criteria for these diagnoses, it is possible that the doctor will have to be satisfied for the time being with a diagnosis of malignant lymphoblastoma, which is an inclusive term. Some pathologists are now distinguishing reticulum cell sarcoma within the group of lymphosarcomas by the larger and more irregular character of the cells.

In addition to the specific tissues referred to above, which, with gall bladders and uterine tubes, are the most numerous of the surgical specimens, there are tumors of bone, rectum, skin, mouth, ovary, vagina, parotid and intestine. Branchial and thyroglossal duct cysts and fistulas, anal fistulas, cutaneous ulcers and granulomata fairly well round out the list. A history of the lesion and the age and other pertinent facts about the patient should accompany all of these tissues.

Detection of cancer cells in pleural and ascitic fluid is sometimes possible by histologic methods. If it is desired to submit such fluid for examination, a certain amount of preliminary work is necessary. The entire amount should be centrifuged or the cells allowed to settle out in a refrigerator. The supernatant fluid is then poured off and discarded. Smears are made from the sediment and are air-dried. The remaining sediment is then collected and allowed to settle again, or it is centrifuged in order to concentrate as much as possible. The remaining supernatant fluid is discarded and 10 per cent formalin is added to the settled material, which is then sent to the pathologist along with the smears.

Blood smears are often submitted for diagnosis, and usually with too little data. A history of the illness, the hemoglobin value and red and white cell counts should be sent with thin, even blood films on clean slides. Rinsing the slides in 95 per cent alcohol and drying, before making the smears, will add to the ease of making even films. Slides which are stained immediately are always better than those submitted unstained. Wright's stain and distilled water for dilution and washing will usually produce good results. Glenwood-Inglewood triple-distilled water, sold in gallon bottles by a Minneapolis concern, or parenteral flask water, are ideal.

While peripheral blood studies are indispensible in many cases, they are not always diagnostic of specific disease, and now some pathologists want bone marrow to prove or disprove a condition suspected from study of the peripheral blood. The diagnostic value of expert bone marrow examination in obscure anemias and in unexplained chronic febrile conditions is gradually being appreciated.

In his role of consultant, the pathologist is naturally in a position to supplement the education of every doctor. Most men in the field are willing to return microscopic sections of material studied to the referring physicians. Some doctors profess histology to be out of their sphere and do not consider their judgment or knowledge in this field sufficient to enable them to gain anything from a study of sections. With a good pathologic report at hand, however, this is not the case, and many will find the study of surgical sections a refreshing departure from the routine of clinical practice.

The press of time prevents the average doctor from putting the acid test to much of his clinical diagnosis, but here the pathologist can be of further service. Post-mortem technique is not difficult, and any doctor can learn it from the observation of a few dissections, followed by practice.

(Continued on Page 309)

CLINICAL-PATHOLOGICAL CONFERENCES

KIMMELSTIEL-WILSON SYNDROME

A. J. HERTZOG, M.D., and W.D. HAYFORD, M.D.
Minneapolis, Minnesota

Dr. William Hayford: (A-46-2190). This forty-nine-year-old woman was first admitted to the Minneapolis General Hospital in 1932, complaining of having had diabetes mellitus for three years. Her blood pressure was 138/80. A urinalysis showed 4 plus sugar and was positive for acetone. The blood sugar at this time ranged between 190 and 240 mg. per cent. A glucose tolerance test showed a diabetic curve. She was discharged on 25 units of regular insulin daily. She was next seen in 1935. Her blood pressure was 136/90. Blood sugar was 240 mg. per cent. She had not taken insulin during the previous year for financial reasons. Her diabetes was controlled and she was discharged on 40 units of regular insulin daily. Her final admission was on August 15, 1946. She was complaining of swelling of the legs and abdomen for the past two years. Acute complaints were swelling of the upper extremities and eyelids, and nausea and vomiting. For the past few weeks she had blisters of the legs. When they broke, they drained for long periods of time. She was short of breath. The edema of the lower extremities gradually progressed upwards to involve the hips. In the last few months her abdomen had begun to swell. She required three pillows in order to sleep at night. She urinated four times a day and only small amounts.

On physical examination, the blood pressure was 190/92. The pulse was regular and 80 per minute. The patient was slightly dyspneic. There was edema of the eyelids. The breasts were distended with fluid. The tissues of the chest posteriorly pitted on pressure. Auscultation of the lungs demonstrated moist rales bilaterally in the lower lung fields. The respiratory rate was 32 per minute. Heart examination showed the point of maximal impulse to be 11 cm. to the left of the midsternal lines. There was a slight apical systolic murmur. There was marked ascites and grade 4 pitting edema of the lower extremities. There were small bullae on the lower legs, some of which had broken and were oozing fluid. There was two plus pitting edema of the upper extremities and three plus pitting edema of the sacral region.

Urinalysis showed a specific gravity of 1.034 with 3 plus albumin and occasional red and white blood cells. The urine sugar varied with the amount of insulin. Every urinalysis showed from 3 to 4 plus albumin with many red cells and pus cells. A quantitative albumin determination showed an excretion of 12 grams of albumin in a twenty-four-hour specimen. Blood urea nitrogen was 23 mg. per cent. Blood sugar was 140 mg. per cent. Plasma proteins varied from 6.7 to 6.5 grams per cent. Quantitative determinations of plasma proteins showed 3.93 grams of albumin and 2.73 grams of globulin. On August 23, 1946, her venous pressure was 21 cm. of citrate. The circulation time was 15 seconds. She was given mercurial diuretics and subsequently voided 7,675 c.c. of urine. Thoracentesis was done and several thousand cubic centimeters of fluid were removed from her chest. The hemoglobin, white blood count and differential blood count were within normal limits. The prothrombin level was normal. Serology was normal. Blood chlorides and carbon dioxide combining power were within normal range. The P.S.P. test for kidney function showed a total excretion of 35 per cent in two hours.

On September 22, 1946, the patient had a sharp nonradiating precordial pain and a pulse of 120 with a gallop rhythm. The symptoms were relieved by nitroglycerine. On September 27, the venous pressure was 25 cm. of citrate. The anasarca persisted. On November 5, 1946 while sitting on the side of her bed, she expired very suddenly.

Dr. Hertzog: Does anyone wish to explain the severe generalized edema that occurred in this diabetic woman?

Intern: Kimmelstiel-Wilson's syndrome.

Dr. Herman Koschnitzke: When a diabetic develops generalized edema with a marked albuminuria, we naturally think of Kimmelstiel-Wilson's syndrome. The plasma protein level in this case was not lower than 6.5 grams. She had hypertension and an enlarged heart. She had an attack of cardiac pain relieved by nitroglycerine. An electrocardiogram showed low voltage of the QRS complex, a slight ST depression, and tachycardia with a gallop rhythm. Her venous pressure was 25 cm. of citrate. Hence she definitely had heart failure. We thought that the edema, however, was out of proportion to the degree usually seen in heart failure. It is reasonable to believe that the lowered plasma protein may have been a contributing factor in her generalized anasarca.

Dr. Hertzog: Kimmelstiel and Wilson[3] called our attention to the so-called intracapillary glomerulosclerosis of the kidneys in diabetes mellitus. They emphasized a nephrotic syndrome associated with this renal lesion in diabetics. The Kimmelstiel-Wilson syndrome has been used very loosely to describe the edema

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From the Department of Pathology, Minneapolis General Hospital, A. J. Hertzog, M.D., pathologist.

due to heart failure in diabetics. A restricted definition would be edema in a diabetic resulting from albuminuria and hypoproteinemia as a result of intracapillary glomerulosclerosis of the kidneys. Hypertension occurs because of the vascular changes in the kidneys. Most of the cases give a history of a normal blood pressure at one time. The hypertension as in this case is of gradual onset. Porter and Walker[4] describe the typical events of a case of Kimmelstiel-Wilson syndrome as shown by one of their cases. Diabetes mellitus was diagnosed in 1929 at the age of thirty years. In 1932, albuminuria, mild edema, and hypoproteinemia were first noticed. Blood pressure was 98/65. In 1937, edema was marked. The blood pressure had risen to 160/80. Albuminuria was 3 plus. Total plasma proteins were 4.1 grams per cent. In 1938, blood pressure was 180/95. Anasarca was marked. Renal insufficiency developed and she expired. Dr. Bell[2] has studied the kidneys of 606 diabetics at autopsy. He found the lesion of intracapillary glomerulosclerosis of both the nodular and diffuse type in 22 per cent of males and 36 per cent of females. One can diagnose about 20 per cent of cases of diabetics at autopsy from the microscopic findings in the kidneys alone. Allen[1] believes because of the high incidence and clear-cut character of the glomerular lesion in diabetics, the kidneys offer the most reliable histologic diagnosis of diabetes mellitus of the age group over forty years. We can diagnose about 50 per cent of diabetics from the changes in the islands of Langerhans with the usual hematoxylin and eosin stain. When the beta granules of the islands are studied with the Gomori stain, this percentage goes up considerably. In Dr. Bell's series only about one-third showed appreciable edema in spite of the renal lesion. The edema when present appeared to be due to heart failure rather than hypoproteinemia. Diabetics today die largely of complications related to cardiovascular disease rather than coma. The marked tendency of a diabetic to develop arteriosclerosis at an early age appears to be uninfluenced by insulin therapy. Dr. Hayford will give the autopsy findings.

Dr. William Hayford: The body was that of a middle-aged female, measuring 161 cm. and estimated to weigh 160 pounds. There was generalized anasarca present with marked pitting edema of the lower extremities. The abdominal cavity contained approximately 3,500 c.c. of straw colored fluid. Each pleural cavity contained approximately 800 c.c. of similar fluid. The heart weighed 440 grams. There was moderate hypertrophy and dilatation of both ventricles. There was a large fibrous scar resembling a healed infarct that involved the greater part of the left anterior ventricular wall. The coronary arteries showed grade 4 sclerosis with complete occlusion of the anterior descending branch of the left coronary. The cardiac valves appeared normal. The lungs showed moderate generalized edema and atelectasis as a result of the hydrothorax. The liver was enlarged and weighed 2,350 grams. It had the gross appearance of severe passive congestion. The pancreas appeared to be of normal size and consistency. The right kidney weighed 210 grams and the left 240 grams. Both kidneys were large, pale, and finely granular. The remaining organs showed nothing of note.

Dr. Julian Sether: The microscopic slides show passive congestion of lungs and liver. The lungs contain many macrophages filled with brown pigment as found in the so-called "heart failure" cells. The myocardium shows the picture of an old myocardial infarct with a large fibrous scar. The pancreas with a hematoxylin and eosin stain shows partial hyalinization of many islands. A Gomori stain shows marked reduction of the beta cells of the islands. It is estimated that the islands do not contain more than 10 per cent beta cells. Our interest is naturally centered on the kidneys. The afferent arterioles show marked subintimal hyalinization and thickening of the walls. The hyaline material extends from the arterioles into the glomerular capillaries to cause a marked intercapillary thickening. The hyaline material is deposited between the glomerular capillaries. Most of the glomeruli show this lesion to be diffusely distributed throughout the tuft. An occasional one shows the hyaline material to be localized and circumscribed in distribution. There are some areas of cortical atrophy present. The tubules show nothing of note.

Dr. Hayford: The anatomical diagnosis then is (1) diabetes mellitus, (2) intracapillary glomerulosclerosis of the kidneys, (3) hypertrophy and dilatation of the heart (hypertension), (4) coronary sclerosis with myocardial fibrosis, (5) passive congestion of liver and lungs, and (6) bilateral hydrothorax and ascites. We considered the edema to be due largely to heart failure. It is plausible to believe that the lowered plasma proteins may have been a contributing factor to her generalized anasarca. In reviewing the literature on Kimmelstiel-Wilson's syndrome, one is impressed by the lack of quantitative studies. Few cases record the plasma protein level and extent of heart failure. Many times the diagnosis was made on patients who were in a moribund state on admission to the hospital and without benefit of autopsy confirmation.

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DIAGNOSTIC CASE STUDY

ARTHUR H. WELLS, M.D., OLIN W. ROWE, M.D., and HAROLD H. JOFFE, M.D.
Duluth, Minnesota

Dr. A. H. Wells: We have a most remarkable diagnostic problem of the dramatic and rapidly fatal type.

Dr. O. W. Rowe: I saw this fifteen-year-old school boy in his home about forty hours before his death and three days after he had developed abdominal distress, fatigue, and difficulty in breathing. These symptoms were first noted after the boy lifted a heavy boat anchor out of the river. They gradually increased in severity. He had been under my care since birth, and was in apparent excellent physical and mental health at the time of onset of his present illness. He was lying on his left side, a little cyanotic and breathing rapidly. He pointed to the mid upper third of the abdomen as the seat of pain. The lung excursions were equal. Heart sounds were faint. There were confused faint murmurs, one of which was systolic, apical, and apparently not transmitted. His pulse was 125 per minute, faint and regular. I was unable to get his blood pressure. The abdomen was soft and not tender. My immediate diagnosis was that of acute cardiac condition, possibly pericarditis with effusion.

At the time of admission to the hospital fifteen hours before death, the physical examination revealed a robust fifteen-year-old boy, measuring 67 inches and weighing about 160 pounds, in acute distress with dyspnea and cyanosis. He was very weak and tended to lie on his left side. Circulatory collapse was continuous. His pulse was 68, respirations 24, and rectal temperature 102.4° F. There was air-hunger type of respiration with limited but equal expansion of the lungs. The apical beat of the heart was not visible or palpable. The heart sounds were weak and distant. A diastolic apical murmur was heard on one examination. A doubtful pulsus paradoxus was noted and later pistol-shot sounds were heard over the femoral arteries. There was some tenderness in the epigastrium. Otherwise, the abdominal examination was entirely normal. His distress had become continuous and located much of the time in the lower thorax.

Two consultants, Dr. F. J. Hirschboeck and Dr. S M. White, could hear a pericardial friction rub the first day of his illness which disappeared later. Aspiration performed by Dr. M. G. Gillespie failed to produce any fluid from the pericardial sac. The consultants felt that the patient had a circulatory collapse of unknown etiology.

A portable film of the chest revealed no enlargement of the cardiac shadow or distortion of the shape of the heart. There was slight congestion in both lungs according to Dr. Arden L. Abrahams. Dr. S. H. Boyer, Sr., interpreted the electrocardiograms (Fig. 1) as follows: rapid rate and regular rhythm; ST_2, depressed, rises with slight concavity to pointed apex; T_3 inverted, T_4 upright, and T_{1-2-4} upright, do not exceed normal voltage. The diagnosis was that of auricular tachycardia, T_3 inversion. In the absence of other signs and characteristic features of posterior infarction, such inversion is normal to childhood and even in youth may be accepted as of no significance unless later records disprove this. ST_2 depression is sometimes seen in pericarditis. There was a white blood count of 17,500 with 57 per cent neutrophils, 41 per cent lymphocytes and 2 per cent monocytes.

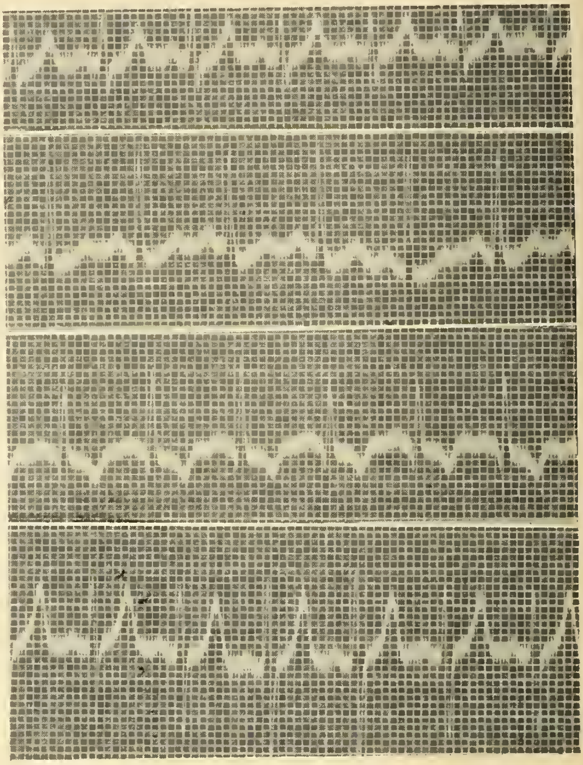


Fig. 1. Electrocardiograms leads 1, 2, 3, and 4 in order.

He was kept on absolute bedrest with nasal oxygen to 6 liters, coramine 2 c.c. every three hours, light diet, fluids not to exceed 2,000 c.c., and one hypodermic injection of morphine, grains 1/8. He continued to complain of abdominal and lower thoracic distress. He was constantly cyanotic and his weakness was progressive and severe. He vomited small amounts of bile stained fluid twice during his last fifteen hours. During the last nine hours his body was cold and clammy. His blood pressure and pulse rate were unobtainable. Respirations increased to 40, and the temperature reached 105° F. He became restless and irrational during the last two hours.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota. Clerical Assistance by Miss Faith A. Gugler.

Dr. A. H. Wells: The case is open for diagnosis.

Physicians: Acute pericarditis, acute rheumatic pancarditis, Fiedler's myocarditis, coronary thrombosis, acute endocarditis with ruptured bicuspid aortic valve, acute cor pulmonale of unknown origin.

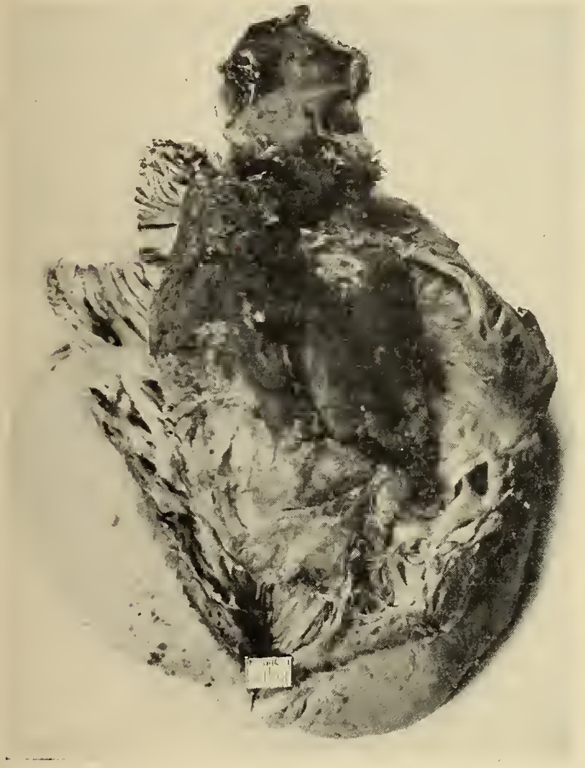


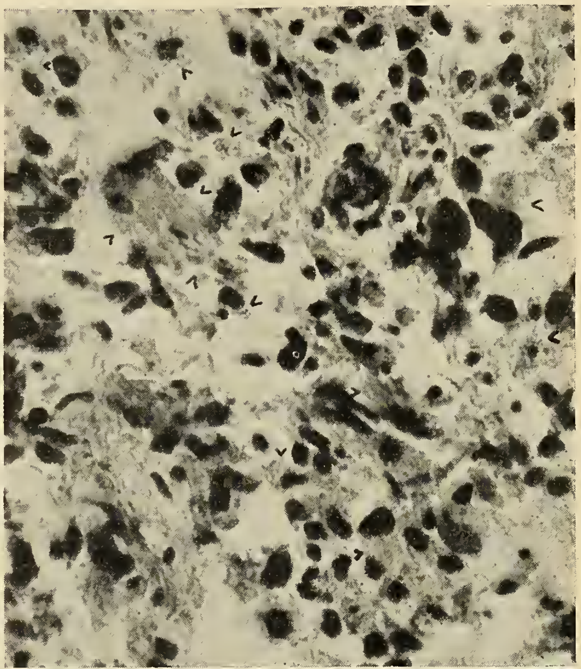
Fig. 2. The rhabdomyosarcoma almost filling the right auricle and ventricle.

Necropsy

Dr. A. H. Wells: The post-mortem examination revealed a large, hemorrhagic, friable, pedunculated tumor mass (Fig. 2) measuring 12 cm. long and 6 cm. in diameter at its largest dimensions. It hung from a site of attachment 2.5 cm. in diameter directly overlying the usual site of the foramen ovale in the right auricle. The mass filled the tricuspid orifice and extended into and almost filled the right ventricle. There was not more than a 3 mm. extension into the interauricular wall. The cardiac cavities, valves, vessels, pericardium, and myocardium were otherwise entirely normal. The heart weighed 360 grams. There was no evidence of chronic passive congestion, edema, metastases, congenital anomalies or significant change in other organs. The brain was not examined.

Microscopic.—Possibly 95 per cent of the cardiac tumor mass was necrotic and hemorrhagic. A few preserved areas were composed of a moderately cellular, highly anaplastic lesion, characterized by a predominance of long spindle-shaped cells, with occasional larger multinucleated, rounded, or elongated cells. A finely granular cytoplasm frequently contained longitudinal and cross striations (Fig. 3). The nuclei tended to be oval or elongated and had a hyperchromatic granular chromatin which on occasions appeared in ill-defined linear arrangements. No "spider cells" of congenital rhabdomyoma could be found.

In conclusion, this otherwise normal fifteen-year-old boy died as the result of tricuspid block caused by a pedunculated rhabdomyosarcoma of the right interauricular septum.



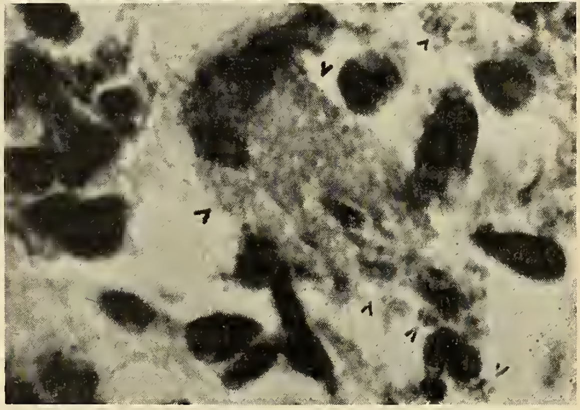


Fig. 3. (above) Phosphotungstic acid, hematoxylin stained preparation with oxer-exposed prints revealing relatively faint cross striations (indicated by arrows) in the cytoplasm of embryonic muscle cells.

Fig. 4. (below) Enlarged view of a selected field of Figure 3 with the same over-exposure of the print.

Discussion

In spite of the rarity of primary tumors of the heart, the subject has been reviewed[3,6,14] repeatedly, so that many facts concerning these lesions are well organized and the controversial subjects clearly defined. The exact frequency of these neoplasms has not been determined at present since as many as 30,000 autopsies have been performed[13] without finding a single case. In other instances, 8,550 necropsies produced four primary tumors,[10] 1,200 examinations revealed three cases,[12] and in our hospital one case was found in the last 3,000 autopsies. By 1945[13] primary heart tumors totaling 163 had been counted in the literature. There were sixty-three "authentic" cases[2] of rhabdomyoma and apparently only four cases[7,8,9] of rhabdomyosarcoma of the heart.

The primary tumors of the heart can be readily classified into five groups: myxoma, fibroma, rhabdomyoma, sarcoma, and rare miscellaneous tumors. The malignant varieties represent 29 per cent of the total.[8]

Pathology

The myxoma is the most frequent of the primary cardiac tumors. Its benign, frequently pedunculated nature, its usual site of attachment on the left interauricular septum, and its occasional mitral stenotic clinical syndrome, sometimes altered by the position of the patient, make it the one heart tumor which might be recognized and cured by operation. The exact nature of this lesion has been debated. Some feel that it is not a true neoplasm but a myxomatous change in an edematous thrombus. The majority favor its neoplastic nature. A poorly cellular, edematous, Wharton's jelly type of tissue bespeaks a slow-growing benign character.

Small, rounded or papillary, generally pedunculated tumors composed of adult fibroblasts form the second most common group of heart tumors (fibromas). These have been found attached to some one of the heart valves. They have been innocuous and consequently innocent pathologic curiosities.

The benign rhabdomyomas are undoubtedly the most intriguing of the cardiac tumors. Over half of the cases occur in the first year of life, and only seven cases have been described in patients over fifteen years of age.[2] In 50 per cent of the patients with this lesion, there is an associated tuberous sclerosis of the brain.[8] One is also very likely to find other congenital anomalies, including cleft palate, harelip, cystic kidneys, multiple gliomas, hypernephroma, sebaceous gland adenomas, embryonic rests in the kidney and malformations of the pancreas. These frequently associated dysontogenetic lesions are a strong argument in favoring the common opinion that rhabdomyomas of the heart are not true neoplasms but hematomas. They are described in three gross forms[2]: single nodules usually near the apex; multiple nodules scattered through the heart; and, rarely, diffuse involvement of the myocardium even to the point of complete replacement. The cells composing these nodules are tubular and similar to those found in the embryonic heart muscle of the thirteenth week of fetal life.[5] Their large glycogen content results in a typical "spider-cell" appearance. When cut at a right angle to the length of the cell, strands of cytoplasm suspend the centrally placed nucleus to the thick outer wall. The cytoplasm may have cross striations. The hollow spaces contain glycogen.[2]

Only one nonconvincing case of malignant transformation of a rhabdomyoma to a rhabdomyosarcoma has been described.[8] It is entirely possible that rhabdomyosarcomas of the heart are a separate oncologic entity. The finding of typical multiple rhabdomyomas, tuberous sclerosis or other commonly associated lesions in a patient with a rhabdomyosarcoma seems essential before relating the two conditions.

It is entirely possible that the last relatively large group of primary cardiac neoplasms, the sarcomas, may contain instances of rhabdomyosarcoma without the necessary identifying striations. The majority of the sarcomas described[14] are simply designated as round cell, spindle cell, giant cell, or myxosarcoma. They occur at any age. They generally arise in the auricles, especially on the right side, and often from the interauricular septum. Occasional metastases to other organs are recorded. At times they become huge before causing death.

Secondary tumors of the heart are more frequent than the primary neoplasms, occurring in approximately 7.3 per cent of all deaths due to malignancy.[11] They are metastatic from practically all sites of carcinomas, sarcomas, melanomas, and the leukemias. The origins of greatest frequency are the bronchogenic and breast carcinomas.[11] However, the incidence of heart involvement in melanomas, reticulum cell sarcomas, and leukemias may be over 50 per cent. They are found in any part of the heart. Possibly because of the great preponderance (three fourths) of cardiac venous return through the Thebesian venae minimae into the right ventricle (Kretz) most of the metastases are found in its walls. It has become obvious through the years of post-mortem examinations that those malignancies which invade the heart usually are not inhibited by the other tissues seldom involved by metastases, such as the spleen, pancreas, thyroid, and voluntary muscle. They generally have a very wide distribution of metastasis and are quite embryonic in type. This obvious immunity of specific tissues to metastases could be the clue leading to the discovery of an efficacious therapeutic extract for the control of cancer.

Clinical Recognition

Primary or secondary heart tumors cause cardiac embarrassment by (1) mechanically blocking of a valve (mitral and tricuspid), (2) interference with transmission of the electrical impulse, (3) pericardial effusion, and (4) extensive destruction of myocardium by infiltration. These various lesions can give rise to almost any sign or symptom of heart disease. However, there are certain manifestations or cirumstances which have aided in the recognition of neoplasms in the heart.[9,14] The ball valve action of a tumor may cause a murmur which changes or disappears with change of position and the effect of gravity on the tumor mass. The electrocardiogram[1] may demonstrate a heart block or bundle branch block which cannot be easily explained because of lack of the other signs pointing to coronary disease. The pericardial effusion is frequently hemorrhagic and occasionally contains demonstrable neoplastic cells. Malignancies of the heart causing cardiac embarrassment are generally large and at times cause distortion of the shape and size as best demonstrated by roentgenologic methods. What intravenous radio-opaque dyes can do in demonstrating these lesions needs further elucidation. In any patient with known malignancy, the sudden onset for cardiac symptoms may well be on the basis of cardiac metastasis. Intractable myocardial insufficiency without obvious cause may be on a tumor basis.[9,14]

Although very few tumors of the heart have been recognized as such prior to necropsy, the time should come when a benign pedunculated myxoma of the left interauricular septum will be clinically recognized and surgically cured. More alert physicians are already metastatic-cardiac-tumor conscious.

Summary

1. A fifteen-year-old boy developed abdominal and thoracic distress, muscular weakness, and dyspnea, progressing to circulatory collapse and death over a five-day period.
2. Necropsy revealed a rhabdomyosarcoma of the right interauricular septum with much necrosis and recent hemorrhage which had blocked the tricuspid valve.
3. This appears to be the fifth rhabdomyosarcoma of the heart in the world literature.
4. A very brief review of the more important facts and theories concerning both primary and secondary neoplasms of the heart is recorded.

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HISTORY OF THE CIRCULATION

(Continued from Page 267)

that they exist. It must be recalled that Cesalpino also suggested that an anastomosis existed between the arteries and veins. Harvey further explained that both the arteries and the veins contain blood and that movement of the blood is progressive, not undulating. He also showed that the functional center of the cardiovascular system is the heart, not the liver.

In this rather brief review of the history of the discovery of the circulation of the blood, facts have been recorded as they are found in the annals of history. After these many centuries the primary concern is no longer with priority of discoverers but rather with the importance of observations and conclusions as recorded by the contributors. History unmistakably inscribes the chronology of events. Each is important and its individual merit should be emphasized as we today contemplate in retrospect on the progress of history and the influence of these various contributions on what is known at this time as modern medicine.

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CASE REPORT

ADENOCARCINOMA OF THE SWEAT GLANDS WITH METASTASES

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MALIGNANT tumors of the sweat glands with metastases are rare. Gates, Warren and Warvi[1] reported thirty-five cases, four of them with metastases. The case I wish to report is one of interest because of the many areas and tissues involved and the associated lesions present.

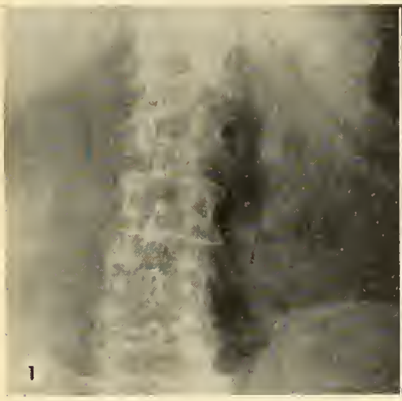

Fig. 1. X-ray of the abdomen on August 11, 1943, before operation. The density in the right abdomen suggests a soft tissue mass. The operative findings showed that this was probably secondary to an intra-abdominal hemorrhage from a lesion in the liver.

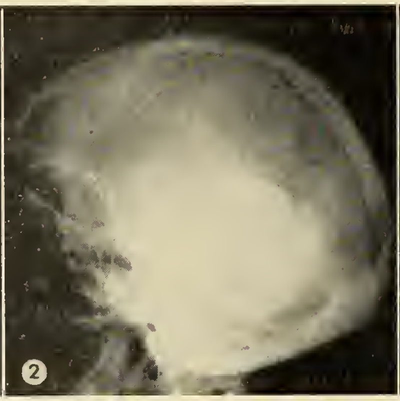

Fig. 2. Lateral view of the skull. The shadow of a dense tissue mass may be seen about the right ear, with erosion of the temporal bone about the mastoid and eburnation which was probably secondary to an infection in the tumor mass. Several nodules in the scalp could be seen in the original film but are lost in reproduction.

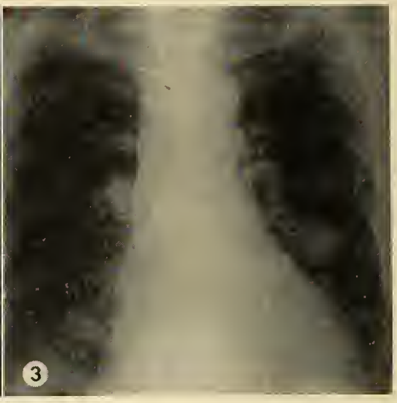

Fig. 3. X-ray of the chest on April 29, 1946, shows multiple rounded densities in the left lung which are most probably carcinomatous metastases.

Case Report

Mrs. C., aged 76, a widow for twenty years, was of Irish descent. She had had the ordinary diseases of childhood. Her tonsils had been removed in her earlier years. Twenty years ago, she noticed a skin tumor in front of the right ear. In two years time, this grew quite large, and she had it removed. Apparently it was malignant, for she had radium and x-ray treatments following the operation. Her father died of cancer of the mouth at seventy-nine years of age. Her mother died at twenty-four following childbirth. Mrs. C. was married at eighteen and at the time of examination had three grown children, all healthy. Another child, a daughter, died several years ago of tuberculosis. Her husband died of cancer of the mouth twenty years ago. Her menopause, when she was fifty, arrived with no particular disturbances.

When first seen by me in August, 1943, she complained of pain in the upper right quadrant. This pain had started one month previously. Her general health had been quite good. Her weight was 120 pounds; she was 5 feet 5 inches tall. She had worn glasses for about eight years. She stated she became somewhat deaf in her right ear fifteen years before, followed shortly by bilateral, nearly total deafness. She had been wearing a hearing aid since.

She had quite a large growth involving the external right ear and mastoid area, one involving the skin of the right breast, several growths on the scalp, and some on the arms, legs, and back, ranging in size from 1 to 5 cm. in diameter. These were dark in color and raised above the skin. She had upper and lower plates. Her mouth and throat seemed healthy. There was no thyroid disturbance. She had no cough or bronchial trouble. Her heart was normal. Her blood pressure was 140/72. There was no lymphatic enlargement. The liver was enlarged, the lower border extending 1.5 inches below the costal margin. There was pain upon percussion over the gall-bladder area and dullness over the upper right quadrant and some over the whole abdomen. She had a second degree prolapse of the uterus with a marked cystocele. She had no hernia. The bones and joints seemed normal. Her reflexes were normal. She had some varicose veins of the lower extremities. Her hemoglobin was 64 per cent. The urine contained a trace of albumin. Her bleeding time was 1 minute, 10 seconds; clotting time was 4 minutes. The blood Wassermann test was negative. Her temperature was 100; pulse, 78; white cell count, 11,800; and red cell count, 2,970,000.

The growths were thought to be malignant.

Read at the annual meeting of the Southern Minnesota Medical Association, Faribault, Minnesota, September 9, 1946.

Because of the severe pain in the upper right quadrant, a flat plate was taken, and a shadow in the vicinity of the gall bladder was noticed (Fig. 1). On August 12, 1943, three tumors were removed from the right lower leg, one from the right breast, and one from the forehead for biopsy. These involved the skin alone. The pathologist reported adenocarcinoma of the sweat gland type.

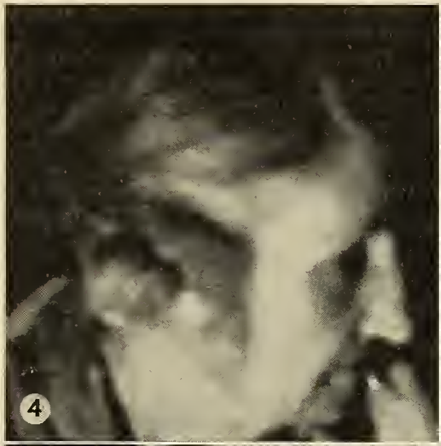

Fig. 4. Tumor of the right ear before operation.

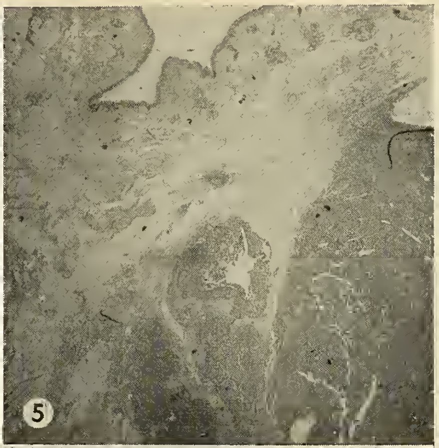

Fig. 5. Photomicroscopic section of the right ear shows malignant degeneration of a cylindroma involving the ear.

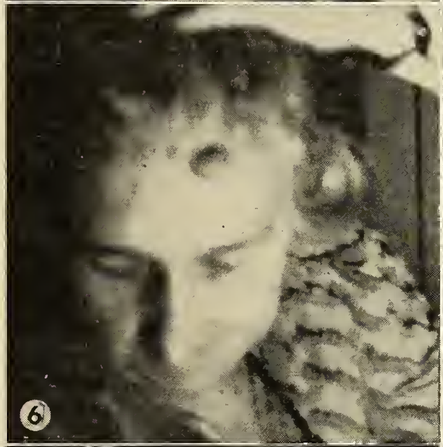

Fig. 6. Malignant growth of the scalp and forehead before operation.

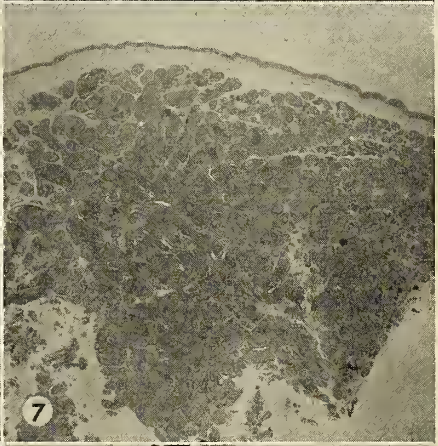

Fig. 7. Photomicroscopic section of a scalp cylindroma (turban tumor).

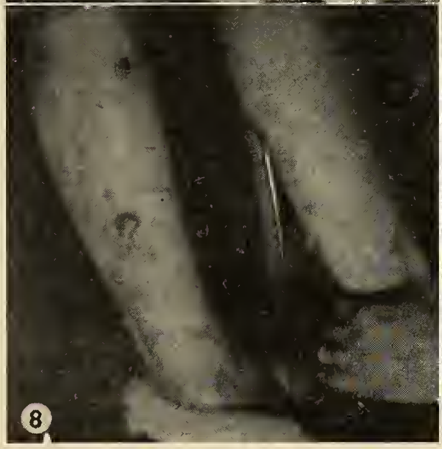

Fig. 8. Malignant growths on the legs before operation.

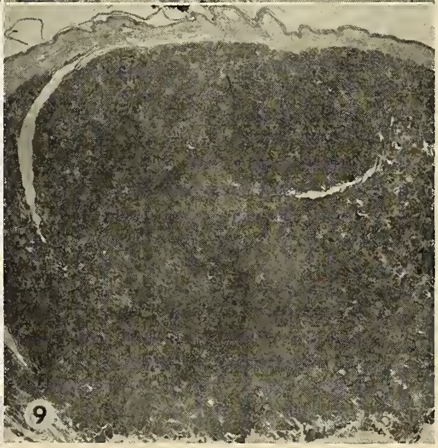

Fig. 9. Photomicroscopic section of a skin cylindroma with characteristic cytology.

Because of the continuous pain in the right upper quadrant and the possibility of a stone in the gall bladder, an exploratory operation was performed on August 17, 1943, through the outer border of the right rectus. The muscle was retracted and the peritoneum opened back of the muscle. The abdominal cavity contained a great deal of blood from a hemorrhage that apparently had occurred from the under surface of the liver, where there were a few greyish nodules. The omentum was adherent to the nodules and liver. The upper surface of the liver was smooth and the right lobe was enlarged. The organ was congested and inflamed. The gall bladder and other abdominal organs were apparently normal, and no stone was found. The adhesions were separated and a portion of the border of the liver including a nodule was removed for biopsy. This was thought by the pathologist to be malignant, but the specimen was reviewed by Dr. E. T. Bell and others who believed it to be an angioma. A positive diagnosis was not made.

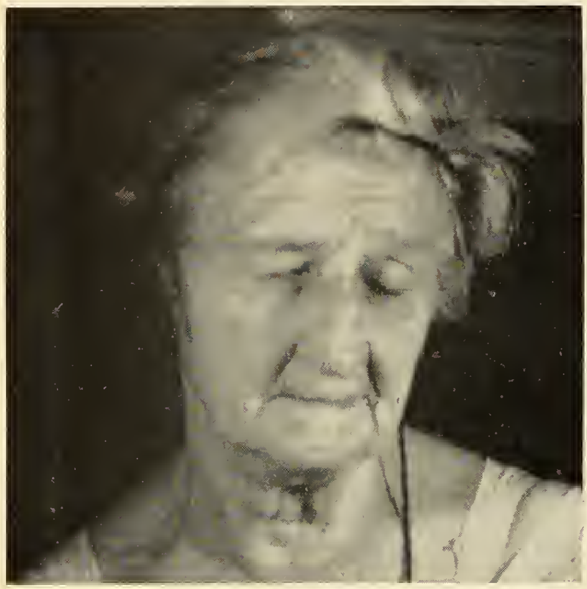

Fig. 10. The patient after removal of the growth of the external right ear and the growths on her forehead and scalp.

Transfusions were given following the operations. The patient made satisfactory progress. The bloody drainage gradually ceased and she was allowed to get up in a few days.

The patient did not require any special attention until April 22, 1946, when she returned complaining of pelvic distress and bleeding from the ear. She was weak and her hemoglobin was 40 per cent. The uterus was prolapsed and a cystocele was present. She had no growth or signs of malignancy in the pelvis. Appropriate diet and blood building remedies were employed. A pessary to support the bladder and uterus was fitted. The bleeding surface of the ear was treated. On April 29, 1946, x-rays were taken of the skull (Fig. 2) and lungs (Fig. 3). These showed invasion of the mastoid and possibly cancer of the lungs.

Because of the large and bleeding tumor of the ear (Fig. 4) which she had previously refused to have removed, we operated on May 2, 1946, removing all of the external ear and the contiguous tissue involved. The skull was not interfered with except to cauterize it, as we removed the malignant tissue by means of the electric knife. The pathologic report was basal cell carcinoma (Fig. 5).

Her progress was very satisfactory, and inasmuch as she seemed to improve after these various procedures, she and her family were anxious to have all remaining growths marring her appearance removed (Fig. 6). We then, on May 10, removed, under local anesthesia, three growths from the frontal region, one from between the shoulder blades, one from the left shoulder, and one from the lumbosacral region. The pathologist reported these growths to be basal cell carcinoma (Figs. 7 and 9).

There still remained the following smaller tumors; five growths on the lower left leg, seven on the right leg (Fig. 8), three more on the back, two on the scalp, and two on the upper right thigh. These we removed under local anesthesia five days later.

The wounds all healed perfectly (Fig. 10), and the patient seemed happy and well satisfied. There remained a little drooping of her right upper eyelid because of a nerve and muscle injury from the operation. The denuded area where the external ear was removed has now healed over, and she covers the defect with a lock of hair.

There remains, however, at this time, within the external auditory canal a small granular mass which probably is malignant, but which we will remove soon with the electric needle.

She weighs 126 pounds. Her hemoglobin remains about 70 per cent. Her general health is good, and she gets about alone.

Comment

This case is of particular interest because of the numerous growths and metastases which have occurred since she first noticed the tumor in front of her right ear twenty years ago. This tumor may have been the same malignant type of the sweat glands. There was no recurrence until a number of years later when it developed in the same location with involvement of the ear and skull, a tumor in the liver with hemorrhages, probable malignant growths in the lungs, and numerous malignant growths of the sweat glands of the scalp and skin of the body and extremities, these tumors being considered similar in nature by the pathologists. It is interesting to note that she has made improvement in a general way since all of these growths have been removed.

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I have never found a person who was merely a physical being. Most of us have minds and bodies and souls, and you can't treat just one part.—Margaret S. Taylor, R.N., Congress on Rehabilitation of the Tuberculous, March 4, 1946.

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
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(Continued from February issue)

A **Dr. Keller** settled in Preston around 1882 and for a few years practiced medicine and surgery there. It has been recalled by the daughter of an early settler, Mr. Joseph Pickett, of Carimona, that in her father's last illness one of her two physician uncles (Dr. William C. Pickett, founder of Carimona, and Dr. Horace W. Pickett) called Dr. Keller in consultation, and that Dr. Keller finally took the case alone.

Dr. Keller, although he possessed the confidence of many persons of judgment, physicians and laity, who believed him to be a skilled member of the medical profession, incurred the disfavor of others, as witness the following broadsides, the first of which appeared in the local *National Republican* in August, 1883:

> Quacks thrive by appropriating as their own the skill and knowledge of others. Dr. Love is one of the sufferers by this too common practice. The sap-head reporter of the *Lanesboro Journal* is doing what he can to give credit for service to others than those who perform it. When either Dr. Love or Dr. Knowles has an accouchement case, he hastens to report that Dr. Keller was the professional attendant. There are several such cases which exhibit the retailer of lies as a scavenger worthy of the dirt he consumes.

And the second appeared in November, 1883:

> Dr. Keller, the quack, who deluded so many Prestonians into the belief that he was an accomplished physician, and who left last fall to "follow his profession in Texas," is in Chicago trying to get a diploma from the Homeopathic Medical College. Will that relieve him from the necessity of borrowing some other physician's small hand?

A Dr. F. Keller practiced in Red Wing, Goodhue County, for a few years, perhaps more, in the seventies. There is official record, which should be considered with the foregoing paragraphs, that on April 24, 1884, Dr. Francis Keller, once of Goodhue County but "now Fillmore, as per certificate," a graduate from the Medical Department of the State University of Iowa, early in 1884, was licensed by the Medical Examining Board of the State of Minnesota to pursue the practice of medicine in the state, and that on March 2, 1885, he formally filed his license with the clerk of the District Court of Fillmore County, as required by law.

Ambitious to extend his scope of practice in a larger place, Dr. Keller left Preston in the eighties, and some years later word came back to the village that he had built up a large practice in Los Angeles.

Herbert Kendall, a graduate of Rush Medical College, was practicing medicine in Spring Valley in 1880, and in that year, at the annual meeting of the Minnesota State Medical Society which was held at Albert Lea on June 15, he was elected to membership in the association. Other mention of him has not been found.

William Nassau Kendrick was born at Athens, Leeds County, Ontario, Canada, on June 15, 1872, the son of Samuel Kendrick and Amelia McNish Kendrick, both of English parentage and natives of Oak Leaf, Ontario. Samuel Kendrick lived until 1903, his wife five years longer.

William Kendrick went to school in Athens, and subsequently was a student at the Almonte Collegiate Institute, at Almonte, Canada, from which he was graduated with honors in 1890, at the age of seventeen. Two years later, having decided to become a physician, he entered McGill University, from which he was graduated in 1896, again an honor student and the president of his class, with the degree of M.D. C.M.; among the awards for scholarship which he had received during his course of four years were the Primary Prize, the Prize for General Proficiency, and the Gold Medal for Proficiency in Chemistry.

Immediately after taking his degree in medicine, Dr. Kendrick came to Spring Valley, Minnesota, to join his half-brother, Dr. J. Ross Johnson, in practice, and on June 9, 1896, was licensed as a physician in the state. In Spring Valley, on October 14, 1896, he was married to Maud M. Lloyd, daughter of L. M. Lloyd of that place. In 1898 a second half-brother, Dr. Charles H. Johnson, of Austin, in neighboring Mower County, who was in ill health, persuaded Dr. Kendrick to become his partner; the association continued for eight years. During the period in Austin there were born to Dr. and Mrs. Kendrick two children, Dorothy Gertrude, on December 8, 1899, and William Lloyd, on March 16, 1903.

In 1905, after the death of his half-brother, Dr. J. Ross Johnson, Dr. Kendrick returned with his family to Spring Valley, where he spent the remaining thirty-one years of his life, a loved physician, high in the esteem and confidence of his patients and fellow townsmen. Among his professional contemporaries in the village were Dr. John D. Utley, Dr. Cyrus B. Eby and Dr. Eubert V. Simons, as well as others who were there for varying periods of time. These men and their fellow practitioners, in the late nineties and well after the turn of the century, experienced many of the difficulties and inconveniences that their earliest predecessors in medical practice had met; the scientific advances of the last two decades were then only visions in the minds of a few research workers.

Always a student, Dr. Kendrick did much postgraduate work, visiting clinics and hospitals, and twice taking courses at the Medical School of Northwestern University. He was a general practitioner, with special interest in diseases of the eye, ear, nose and throat, and he became well qualified in treatment for these disorders. An expert optician as well as an oculist, he fitted glasses for many of his patients. Dr. Kendrick early began to write occasional original articles for the medical journals, of which one of the first was a note on postpartum hemorrhage that was published in the *Northwestern Lancet* in 1898. He served on the local board of health and was a member of the local county medical society, the Minnesota Valley Medical Association, and the Southern Minnesota Medical Association (as stated previously, these two joined in 1911), and the state and the national medical associations.

Dr. Kendrick is recalled as a leader in every movement that had to do with the betterment of his community. He was a member of the Spring Valley Commercial Club, the Automobile Club, and the American Legion and of the following fraternal orders: the Masons (A. F. and A. M.; Grand Master of Minnesota in 1918); the Ancient Order of United Workmen, the Benevolent and Protective Order of Elks, the Modern Woodmen of America and the Modern Brotherhood of America. He was a Republican in politics, an Episcopalian in religious affiliation. During World War I he was an examiner of army recruits, local chairman of the Liberty Loan and Victory Drives, and he aided the national department of justice in locating hidden grain and in dealing with aliens. In October, 1918, he entered military service and was stationed at Camp Pike, Arkansas, until his honorable discharge on December 23, 1918. His favorite diversions, when time permitted, were hunting, fishing and golf.

Although Dr. Kendrick never fully recovered his health after an operation for ruptured appendix in 1912, and although he became the victim of agranulocytic angina, he continued in medical practice until his death, at Rochester, Minnesota, on January 21, 1936. He was survived by his wife, a son and a daughter, and a sister, Mrs. William McNaughton, of Ottawa, Canada. Three years later Mrs. Kendrick removed from Spring Valley to Brainerd where, until she died, on September 28, 1944, at the age of seventy-two years, she made her home with her daughter, Dorothy Gertrude (Mrs. E. C.) Parsons. Late in 1944 there were living of Dr. Kendrick's family, Mrs. Parsons, William Lloyd Kendrick, his son, a mining engineer at Coleraine, and three grandchildren.

Dr. Kendrick lives in the memory of all who knew him, distinguished for his professional ability and his personal integrity and worth.

Elling P. Kierland, who was born at Kjerland Homestead, Hardanger, Norway, on February 18, 1818, was educated in his native place, receiving his general grounding in the schools and his special training, in pharmacy and medicine, under a preceptor. As many another member of his family had done before him, he became a druggist and, although not a graduate of a medical school, a competent practitioner of medicine.

In 1839 Elling Kierland was married to Madli Hovlen, also a native of Hardanger, a religious, conscientious woman who was a fine wife and thrifty homemaker and a devoted mother to the seven children of the marriage. Dr. and Mrs. Kierland in 1856 came with their family to America, settling first on a farm in Winneshiek County, Iowa. After five years in Iowa they moved to Rushford, Minnesota, where Dr. Kierland operated a drug store with his sons, Thomas and Peter E. Kierland, the latter of whom subsequently became a physician in Rushford, a graduate of Rush Medical College in 1869.

In 1877 Dr. E. P. Kierland temporarily discontinued his practice of medicine to enter the hardware business with his son Louis in Canton, South Dakota, but on giving up this enterprise after a few years, he returned to Rushford where he resumed his preferred occupation. Not a graduate of a medical school, as has been stated, he had received excellent training and had improved his knowledge by study, as evidenced by his successful practice, so that on December 31, 1883, under the Medical Practice Act of that year, he received exemption certificate No. 733-3. Until the time of his death at the venerable age of ninety-four years he continued his work of caring for the sick.

Kind, generous, charitable, actively interested in the Lutheran Church and in civic affairs, Dr. Kierland was one of Rushford's most influential and upright citizens. He died on April 26, 1912, at Rushford, survived by three of his children, twelve grandchildren and ten great grandchildren. His family in 1943 was represented in the medical profession by three members: his grandsons, Dr. Peter Ernest Kierland (son of Thomas Kierland), of Alexandria, Minnesota, who for ten years was a physician of Harmony, Fillmore County, and Dr. George E. Hourn, of St. Louis, Missouri (son of Martha Kierland Hourn); and his great grandson, Dr. Robert Richard Kierland (son of Dr. Peter E. Kierland), of Rochester, Minnesota, since the entrance of the United States into World War II absent on military service. (Dr. Kierland returned to Rochester, where he is on the staff of the Mayo Clinic, in December, 1945.)

Peter E. Kierland, one of the seven children of Elling P. Kierland, pharmacist and medical practitioner, and Madli Hovlen Kierland, natives of Hardanger, Norway, was born in Hardanger in 1846 and when he was ten years old came with his parents and his brothers and sisters to America, to a farm home about ten miles east of Decorah, Iowa. Here in the country schools his education was continued. Early in the sixties the family moved to Rushford, Minnesota, where the boy, then fifteen, went to school and helped in the drug store which was operated by his father and his brother Thomas. Peter learned pharmacy from his father and, from 1862 to 1868, whenever time afforded, studied medicine under Dr. Billington, of Decorah, Iowa. At the end of that period he entered Rush Medical College, in Chicago, and from it was graduated on February 3, 1869, with honorable mention for high scholastic rating and with the degree of doctor of medicine.

The young physician, who is remembered as of medium build, with black hair and gray eyes, returned to Rushford to begin his professional life in the community in which the senior practicing physicians were his father, Dr. Thomas H. Everts and Dr. Henry C. Grover, and in which Dr. H. W. Eldred was a highly respected surgeon-dentist. Dr. Kierland was a Mason, a member of the Lutheran Church and from the first a useful citizen.

In Chicago Peter E. Kierland was married to Louise Anderson, and on his return to Rushford brought his wife home with him. Although she never had lived outside of a city, Mrs. Kierland entered fully into the life of the community and sought to share the hardships of a country doctor's routine, accompanying her husband in horse-drawn vehicles on many of his rural calls, regardless of weather. On one of these occasions, in the winter, when Dr. Kierland was to perform a surgical operation, a partial resection of the maxilla, the horse ran away and the cutter tipped over, spilling passengers, instruments and equipment in the snow. With neither his wife nor himself hurt, Dr. Kierland gathered up the paraphernalia and in due time carried out successfully the planned surgical procedure, which was followed by recovery of the patient.

In the second year of his practice, Dr. Kierland, whose fine intellect and scientific ability gave promise of great service to his community and to his profession, was stricken with pulmonary tuberculosis. In the hope that the journey and change of climate would prove beneficial, his father in 1870 took him to Norway but not long after their return to Rushford the young physician died, on January 28, 1871. His death was announced in the *Journal of* *the American Medical Association*: "He will not miss the haven of hope, with God at the helm."

Dr. Kierland was survived by his wife; their daughter and only child, Ella; his brothers, Thomas and Louis; and his sisters, Isabel Kierland Eide and Martha Kierland Hourn. Of that group, there were living in the early nineteen-forties only his daughter, Ella Dahl Kierland Rich, retired at Santa Monica, California, after a distinguished career as a concert pianist, and his brother, Thomas Kierland, ninety-two years of age (1943), who had retired some time previously after fifty-six years as a practicing pharmacist in Rushford.

E. J. Kingsbury, who was to become a well-known medical practitioner of southern Minnesota, was a native of New York State, born in Franklin County on August 23, 1832. When he was four years old the family moved to St. Lawrence County, where he grew up. He obtained his preliminary and academic education at a district school in Potsdam, at a select school in Raymondville and during six terms at the Raymondville Academy under Professor Montague. Thus prepared, at the age of eighteen years he began to study medicine under preceptors, the first instructor Herman A. Boland, of Raymondville, and the second, Dr. Goodrich, of Potsdam. He completed his medical training by attending lectures at the American Medical Institute at Cincinnati and he was graduated from that institution on March 14, 1854. Beginning his medical practice immediately in Oswego County, New York, he remained there until the autumn of 1855, when he traveled west to Minnesota Territory and settled in Mower County, pre-empting the southwest quarter of section 20, town 102, range 14, in the present Bennington Township. In fact, he assisted in the organization of the township and served as first chairman of the first board of supervisors. After a few years he moved, in the autumn of 1860, to the village of Spring Valley, in Fillmore County, where he remained in active medical practice for eight years. During this period there was occasional mention in county records of his having received fees for medical attendance on paupers.

In Spring Valley, if not immediately on his arrival, at least prior to 1865, he had his offices on Broadway, opposite the tinshop. A professional card in the *Preston Republican* of March 10, 1865, announced that E. J. Kingsbury and Brother—the first and only mention found of the brother—were physicians and surgeons, and a postscript set forth the following information:

> E. J. Kingsbury, having been appointed Examining Pension Surgeon by the Commissioner of Pensions, will attend to all applications for pensions with promptness and dispatch. They will also attend to the collection of back pay and Bounty.
>
> E. J. Kingsbury
> W. B. Kingsbury

Late in 1868 Dr. E. J. Kingsbury moved to Decorah, Iowa, where he remained until 1870, when he again settled in Mower County, in the village of LeRoy, which became his permanent home. The beginning of his practice there was coincident with an outbreak of diphtheria during which he served faithfully and with such success as to establish him in the confidence of the community. During his first year in Le Roy, Dr. Kingsbury was one of several reputable physicians of Iowa and Minnesota to endorse, in a notice in *Western Progress*, the newspaper of Spring Valley, one Dr. H. J. Stalker, mentioned earlier, apparently a dentist of merit who traveled about the region.

E. J. Kingsbury was married twice, the first time on July 3, 1853, to Lucia A. Angell, who was born at Pomfret, Vermont, on April 8, 1829. Mrs. Kingsbury died in Spring Valley, Minnesota, on September 28, 1867, leaving one child, Flora A. Kingsbury; an infant son had died a year earlier. Dr. Kingsbury's second marriage took place on October 21, 1868, to Mary G. Hard, who was born in Broome County, New York, on September 21, 1846. Of this marriage there were three children, Mattie J., Mildred A. and Elmer J. Kingsbury.

A strong advocate of temperance, E. J. Kingsbury from the age of seventeen years was a member of one temperance organization or another. That he was a man of active intellect and professional versatility was evidenced by the fact that he studied law and became a qualified member of the bar of Minnesota, admitted on April 6, 1882, to practice law in all courts in the state. In 1884 he had been serving for four years as police justice of Le Roy.

Dr. Kingsbury is said to have died in 1885, at the age of fifty-three years.

S. H. Knowles for a time in the early eighties was in Preston, Fillmore County, and in this period, on July 25, 1883, aged twenty-five years, he became a member of the Masonic Blue Lodge of the village: he did not withdraw from membership until 1899, although it is believed that he long had been gone from Preston.

In the local newspapers of 1883 there appeared items, always with approbation, concerning Dr. Knowles' professional services in cases of various types. And in the *Chatfield Democrat* of September 1, 1883, there appeared the following note: "Dr. S. H. Knowles has resigned his position as County Physician. Here is an opportunity for some enterprising doctor to travel over the county, administer to the sick and furnish medicine, all for $300 a year." Finally, on November 29, 1883, the *National Republican* of Preston had this to say:

> S. H. Knowles left Preston yesterday for Omaha where he has entered into partnership with Dr. J. C. Deinse, an old and successful practicing physician having an immense practice. Dr. Knowles will have charge of the general practice, for which he is well qualified. The future of this young physician will be mainly successful. Few, if any, young men in his profession have attained his experiences and knowledge of the literature of medicine and surgery. Preston has suffered a serious loss in his leaving. His friends gave him a reception in Hamre Hall on Monday evening.

For what it may signify in this account, it should be stated that Dr. Seth Knowles, a graduate of the College of Physicians and Surgeons, of Keokuk, Iowa, in 1878 (if this was S. H. Knowles, he was twenty years old), was licensed to practice medicine in Minnesota on August 18, 1884, receiving certificate No. 944 (R) under the "Diploma Law" of 1883. It should be noted also that many physicians, although they promptly secured their licenses under the new law, did not file them promptly. By 1890 Dr. Seth Knowles was residing in Minneapolis, according to the 1883-1890 official register of physicians of Minnesota; he died prior to 1909, presumably before 1907, since his name does not appear in the first issue (1906) of the Directory of the American Medical Association.

(To be continued in the April issue.)

President's Letter

MINNESOTA MEDICAL SERVICE, INC., TO BEGIN OPERATION SHORTLY

Minnesota Medical Service, Incorporated, a nonprofit corporation, has been born and is now a living, vibrant organization. It was initiated by the Minnesota State Medical Association, but there is no business connection between the two organizations. During the period of nascency, which lasted almost two years, the committee on organization of medical service worked diligently. It obtained information from many sources and it studied the plans of organization and operation of similar corporations in other states. By this method it hoped to utilize the features of value of other plans and sought to avoid the errors which others have made. Finally the committee prepared the articles of incorporation, the proposed contracts and the schedule of benefits. In addition to this, it prepared an agreement with the Blue Cross and secured pledges from the physicians of Minnesota in order to finance the enterprise. These pledges exceeded $100,000.

After this task was completed, the committee on organization made its report before a special meeting of the House of Delegates of the Minnesota State Medical Association on December 22, 1946. Immediately following the formal acceptance of the report by the House of Delegates, the Council was instructed to proceed with the formation of the corporation. Accordingly, the incorporators were selected by the Council and they were requested to deal with the details incident to the creation of Minnesota Medical Service. Within a few days the articles of incorporation were filed and accepted. The directors of the corporation and its officers have been elected, and the pledges are being honored in a most gratifying manner. It is predicted that the pledges already made will be redeemed, and probably many physicians who did not respond to the first call will seek an opportunity to participate. In fact, many have already done so.

During the discussions which took place in the special meeting of the House of Delegates just mentioned, it became apparent that some of the members believed that an indemnity plan probably would be more acceptable than a service plan in some communities. Therefore, a second resolution was proposed and adopted which provided that the Council should appoint a committee of five members which should act as a liaison between the State Association and the insurance companies in order to develop plans for the provision of low-cost medical insurance on as broad a basis as possible. This committee was appointed without delay, and a short time thereafter it met with representatives of insurance companies. A similar liaison committee then was appointed by the insurance group and these two committees have been proceeding with their work.

Within a short time, Minnesota Medical Service, Incorporated, will be ready to perform its function. By this means, physicians of Minnesota are attempting to bring a high quality of medical care and provisions for hospitalization to everyone. As physicians set themselves to this task, they are aware that other schemes with similar purposes may present themselves. Their attitude toward such developments is one of complete co-operation as long as such schemes fulfill the requirements of the principles of ethics of the practice of medicine. They realize that probably no single plan will solve the entire problem, but they hope that through the Minnesota Medical Service Plan, a useful purpose will be served in bringing the proper kind of medical care to the infirm.

A great responsibility rests with physicians. Those who gave up so much to serve their country in the recent conflict, as well as those who remained at home, have borne heavy burdens during recent years. It is hoped that these new arrangements will lighten their burden. The prospective importance of this plan, like that of all new ideas and new discoveries, cannot be exaggerated but until it is accepted and used, it can exercise no influence and therefore can work no good. Minnesota Medical Service, Incorporated, will need the care and the interest of every practicing physician. No one can afford to adopt the attitude of complacency or apathy. Of all evils, probably torpor is one of the most deadly. It blunts the faculties of men, withers their powers and prevents effective progress. Since progress depends on the energy of man, our alertness in support of this plan must not slacken. We must maintain that vigor of character, that decisiveness and that audacity, both of conception and execution which alone will pave the way to achievement.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

CALORIE INTAKE AND INDUSTRIAL OUTPUT

Science* has published a simple understandable report out of war-ridden Germany that teaches obvious nutritional lessons, especially the need of adequate protein in order to maintain weight when dietary fats have to be curtailed. Dr. David B. Dill of Harvard University (Industrial Physiology and J. M. Corps, U. S. Army) brought this report back in late 1945. There was an opportunity in Germany to appraise the unit output of workers in quite standardized employments, and to observe the effect of decreases or increases in terms of essential food retrenchments or supplements. Whereas it was possible to add mineral and vitamin supplements, these were of no avail in the absence of basic foods and total calories consumed.

Thus, workers moving earth for an embankment or mining coal (succumbing to German exactitude and complaisance) furnished the scientists with a chance to prove that "rationing of food also means a rationing of industrial production." No doubt that is the source of much trouble in Britain today, as well as in much of the devastated world. "Reconstruction is a problem of calories," according to this report.

Coal miners in training were alloted 1,200 calories daily, out of a total of 2,800, for "work." They handled seven tons of coal daily or used up 170 calories per ton. The researchers advised adding 400 calories per day, and the output went up to nine tons daily at a unit expenditure of 155 calories. But at this level the workers averaged a weight loss of 1.2 kilograms in a period of six weeks, and, of course, that could not be long maintained. So they boosted the intake 800 calories, after which ten tons of coal were mined daily and the weights of the workers returned to normal.

It will immediately occur to many to ask about morale, living conditions, individual degrees of ambition or lethargy. For example we are inclined to think that people living in temperate zones become tired and languid, like the natives, when they move to tropical climates. Against this evidence is the experience of Stillwell's engineers using weak and tired Chinese coolies and putting the famous road over the Hump. They were not capable of heavy work until they were fed more or less like football players, and then their accomplishment was prodigious. Commenting on what happened in Germany when food became scarce, the authors add, "Under existing conditions the job of one man often has to be done by two or three with a resultant higher total wage cost."

The amount of American production in peace and in war stems in great degree from well-fed workers. We have a munificent soil, a virile people, and to these have been added the power of the machine. Despite the sending of vast supplies of food ($300,000,000 worth to our portion of occupied Germany alone, and a prospective three-fourths of a billion demand to carry them through 1948), we seem to have inspired envy far more than a desire to emulate our capitalistic motivated economy. The solemn facts of food should be pounded into the heads of politicians and peace planners. A world interchange of food and goods is needed far in advance of a dissemination of cockeyed ideas of rights, privileges, or ideologies.

E.L,T.

USE OF DIMERCAPROL (BAL)

Every physician who administers any type of arsenical should familarize himself with a new potent detoxifying agent (BAL). This was a result of war research and was developed in England to combat the injurious effects of lewisite gas, hence, the name British anti-lewisite, which was abbreviated to BAL. This chemical is 2, 3-dimercaptopropanol, a dithiol derivative. It has been shown that arsenic interferes with the pyruvate oxidation process of the tissues by attaching itself to the -SH groups which are essential for this reaction. BAL has a greater affinity for arsenic than these groups and, therefore, releases them and forms stable non-toxic compounds which are easily eliminated by the body.

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*Kraut, H. A., and Muller (Dortmund, Germany); Calorie intake and industrial output, Science, 104:495, (Nov. 29) 1946.

BAL is able to prevent toxic reactions and to reverse the process if the tissue cells are not yet dead.

BAL is indicated in all toxic arsenical reactions such as neutralizing arsenical vesicant agents which come in contact with the skin or mucous membranes. Eagle* found marked relief and rapid improvement in the majority of cases of arsenical dermatitis in which BAL was used. It was a life-saving measure in toxic encephalitis and was beneficial in arsenical agranulocytosis, aplastic anemia, hepatitis, and accidental arsenic overdosage.

BAL is usually administered intramuscularly and, in the severe complications resulting from arsenic administration, the dosage found to be best suited is 3mg. per kg. This amount is given every four hours for twelve injections, then four injections are given on the third day, followed by injections twice daily until ten days have elapsed or complete recovery ensues. In less severe reactions, the amount given is 2.5 mgs. per kg. and, after the third day, only one to two injections a day, as indicated.

The reactions to BAL include nausea, vomiting, headache, burning of the mouth, throat and eyes, pain in the jaws, lacrimation and salivation, a constricted feeling of the throat and chest, and burning and tingling of the arms and legs. These occur about fifteen to twenty minutes after administration of the drug. Barbiturates seem to relieve these reactions and, if persistent, the dosage should be reduced.

Some investigators† have found BAL effective in heavy metal poisonings occurring from mercury, bismuth, gold, cadmium, zinc and lead. Its usage in these instances requires further study, and the exact methods of treatment are not yet available.

F. T. Becker, M.D.

VAGOTOMY FOR PEPTIC ULCER

WHATEVER the cause of peptic ulcer, the acid gastric secretion is generally accepted as being the main factor which prevents healing.

The main purpose of medical treatment of peptic ulcer is the constant neutralization of the acid gastric juice by frequent feedings and alkalis. This can be accomplished comparatively easily during waking hours but is well nigh impossible during the night. This is a distinct disadvantage, for a characteristic of the stomach in the presence of a peptic ulcer is that it secretes an abnormally large amount of gastric juice and possesses an increased motility during the fasting period.

It has been known since Pavlov's original experiments that the vagus is concerned with gastric secretion. A stomach isolated from the esophagus and duodenum by transection of the lower esophagus and duodenum, but with the vagus supply intact, will continue to secrete gastric juices. Section of the vagus fibres supplying the isolated stomach will result in a marked diminution in the quantity and acidity of the gastric secretion.

Dragstedt, recognizing this fact, was the first to propose and institute vagotomy in the treatment of peptic ulcer. His reports have stimulated others to follow his lead, and several hundred vagotomies have now been performed.

In Dragstedt's original operation, the transthoracic approach was used, the seventh or eighth left rib being resected. It was felt that only by this approach could the operator be sure of identifying and severing all of the vagus fibres which lie on the lower esophagus and are irregular in their course. Later he found that, with the abdominal approach, the terminal esophagus could be freed and retracted several centimeters, to make the right and left and communicating fibres accessible. The advantage of the abdominal approach is that the site of the ulcer can be inspected, and additional operative procedures can be undertaken at the same time if indicated. For, vagotomy alone is frequently not the cure for peptic ulcer. While it generally lowers stomach secretion and acidity and lessens motility, it not infrequently is followed by gastric stasis which requires constant gastric suction for one or more days following operation. If the ulcer has produced some narrowing of the pyloric outlet, a gastroenterostomy may also be required.

It is too early to make a fair appraisal of vagotomy in the treatment of peptic ulcer. Whether it is or is not the long-sought ideal operation for the surgical treatment of the disease cannot be stated. Certainly it is not indicated for every peptic ulcer. So-called medical treatment is highly satisfactory for most patients who are willing to co-operate in the matter of dieting, taking alkalis, and abstaining from coffee, alcohol and nicotine. Gastroenterostomy has relieved many a patient with recurrent ulcer and/or pyloric obstruction, although the incidence of resulting gastrojejunal ulcer is fairly high. Subtotal gastrectomy for recurrent and bleeding ulcer has proved fairly successful in the hands of a few surgeons but seems a rather formidable procedure.

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*Eagle, H.: The Systemic Treatment of Arsenic Poisoning with BAL. J. Ven. Dis. Inform., 27:114, 1946.

†J. Clin. Investigation, July, 1946.

Vagotomy is apparently making a place for itself in the treatment of peptic ulcer. Perhaps it is particularly indicated in young individuals who, for one reason or another, do not respond to medical treatment and in whom hypersecretion of gastric juice is a prominent factor. Possibly it has a place along with gastroenterostomy. Until, however, indications for its use are more clear-cut, and long-time results of the operation have been observed, the members of the profession should not become too overenthusiastic in recommending it to their ulcer patients.

THE NURSING PROBLEM

THE great scarcity of registered nurses presents a problem dangerous and tragic to the hospitals, physicians and the public, both in urban and rural areas. The situation is truly alarming because it is certain to become much worse before it is better, as the supply of nurses is rapidly diminishing while the demand is increasing, chiefly because of the civil hospital expansion program and the vast construction for veterans.

The plain fact is that girls are not entering the nurses' training course as offered in our city hospitals. There are several elements entering into this situation. The ease with which high school graduates at present can secure satisfactory employment with little or no special training, and the proportional poor pay for well-trained nurses are two elements which are the result of war economy and will adjust themselves.

We in the rural areas are convinced that the chief element, which will not adjust itself, is the unnecessary costs and other demands made upon the girls in the courses offered in the cities today. We feel we have good grounds for criticism, as some years ago there were three-year nurses' training courses in many rural hospitals, two years spent at home and one year in a large city hospital, an arrangement which prepared excellent nurses in adequate supply. They proved themselves excellent because they were in great demand, both in the affiliate city hospitals and the country; also, the State Board examinations proved they were well grounded in the fundamentals as their average standing was high—very rarely did one fail. This desirable and successful arrangement was abitrarily terminated by some authority at the top. Some may say this was in the past but cannot be a success today. Facts prove the contrary.

In Minnesota we have three rural hospitals which have been able to carry on under the affiliation plan because of the consideration given them by the Sisters at St. Mary's Hospital in Duluth. These hospitals have more applicants than they can take, whereas most of the city hospitals have far less than half their needs. I can speak with first-hand knowledge concerning St. Francis Hospital, Breckenridge, a neighboring town. Sister Elizabeth tells me she regrets exceedingly that she is unable to take all her desirable applicants.

There are two chief reasons why the rural hospital courses are successful:

1. They are out where the desirable girls grow.

2. The courses are so arranged that the girls can earn their own way, aside from a few incidentals. Here a poor girl has an equal chance with those who have the means, resulting in better nurses.

The present plan of giving a one-year course for practical nurses and licensing them will help in certain ways, but does not meet the great need for more graduate nurses. We feel there is a solution to the pressing problem, namely, the establishment of nurses' training courses in properly equipped rural hospitals, with one-year affiliation in the large city hospital.

This is a plan that has succeeded and is now succeeding where given a chance. Why not push this plan through before the situation becomes hopeless?

W. L. Burnap, M.D.

Many a maternity patient has received obstetric care in its most literal sense—that is, care which is focused only on her reproductive organs—and died from tuberculosis or diabetes or cancer soon after delivery.—Hazel Corbin, R.N., J. Nursing, (Aug.) 1946.

Read before the National Conference on Rural Health at the Palmer House, Chicago, February 8, 1947.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

1947 NATIONAL HEALTH BILL

On February 10, the National Health Bill of 1947 was introduced to the Eightieth Congress as S. 545. This bill, sponsored by Republican Senators Taft of Ohio, Smith of New Jersey, Ball of Minnesota, and Donnell of Missouri, is a revised version of last year's Taft-Smith-Ball Bill, introduced toward the close of the Seventy-ninth Congress as an alternative to the Wagner-Murray-Dingell measure.

The 1947 National Health Bill is a great improvement over the former measure. New provisions have been added, and the basic philosophy behind the measure has been clarified. Helpful suggestions from members of the health, medical, hospital and dental professions, both those inside and outside of government circles, are responsible for much of this improvement.

Representatives of the American Medical Association met with Senators Taft, Ball and Smith on December 27; the following day, delegates from the New York Academy of Medicine and from the New Jersey State Medical Society met with Taft, Ball, Smith and Donnell. Representatives of the American Dental Association talked with Taft on January 7.

Bill Clearly Indicates Revenue Source

One aspect of S. 545 which should please doctors of medicine throughout the country is the definite provision in Section 307 of the bill, for an appropriation of funds from current revenues to carry out the program which the bill sets up. Section 307 was written into the bill largely at the instigation of Senator Donnell, who is a firm believer in financing from current revenues, as opposed to bond issues. Many have felt with Senator Donnell that the government has too long authorized appropriations without concern as to where the money is to come from.

A brief look at S. 545 reveals the following general provisions: (1) a grant of $200,000,000 a year to states on a population basis for medical care, chiefly to low-income patients, (2) establishment of a new and independent national health agency to handle all the federal government's health activities, (3) distribution of money for dental care with 8 million proposed for the first year and larger amounts each successive year up to 20 million the fourth year, (4) $10,000,000 for cancer control through the financing of diagnostic centers in the states, and (5) periodical medical examinations of all children in public, non-public, primary and secondary schools.

Measure to "Fill Gaps in Medical Service"

In a public statement made when he introduced his bill, Senator Taft said: "The bill we are proposing proceeds on the theory that the United States already had a comprehensive medical service as good as any in the world, but there are gaps in the service, particularly in reaching the lower income groups."

The Taft-Smith-Ball-Donnell Bill has been referred to the Committee on Labor and Public Welfare, of which Senator Taft is chairman, and Senators Ball, Smith and Donnell are members.

An important feature of S. 545 is its proposal to co-ördinate all health activities of the federal government into one independent agency. There is on foot in Washington a movement to put over another bill, which would create a health agency, but would place it in a subordinate position. This bill would set up a Welfare Department, give its head cabinet rank, and place under him three undersecretaries, one to manage health activities, one to take charge of welfare and social security and one to concern himself primarily with education.

Welfare Department vs. Health Agency

A complete analysis of the question of a three-cornered Welfare Department versus an Independent Health Agency has been made by Dr. Marjorie Shearon (Ph.D.), a non-partisan Washington research analyst.

The crux of the question, as Dr. Shearon sees it, is this: Does American Medicine want a third party between it and the President? If the top civilian medical and health officer were an undersecretary, she points out, that would mean he must discuss health and medical programs, legislation and policies with the President through an intermediary—someone, perhaps, from the welfare or social insurance fields.

In a recent issue of her regular Bulletin, "American Medicine and the Political Scene," which she authors in connection with her work as consultant on social legislation for Republican members of the Senate, Dr. Shearon discusses the question fully.

"An independent health agency has great merit," Dr. Shearon maintains. She explains that: (1) it would be founded on law, not created by order of the President; (2) it would be headed by a physician; (3) it would have its own funds from Congress, so that its director would not have to go "hat in hand" to a lay administrator annually for approval of his budget; and (4) it would be separated completely from the aggressive, autocratic Federal Security Agency in which the Social Security Administration is the dominant unit.

Political considerations aside, and speaking only for herself, on the basis of her observations, Dr. Shearon predicts that an undersecretary of health could easily become "only an also-ran," even though he might be an outstanding medical man.

Government "in Medical Picture to Stay"

"The Federal Government is in the medical picture to stay," Dr. Shearon declares. "It is up to American Medicine to determine whether its position in the family of federal agencies is to be strong or weak."

Dr. Shearon stresses the need for separation of health and medical functions from the control of the Federal Security Agency, calling this separation "the most important single objective to be sought at this time." The Taft-Smith-Ball-Donnell Bill calls for such a separation when it creates an independent health agency, responsible to the President and headed by an outstanding physician—thus it offers a way to protect highly technical health and medical functions of the Federal Government from lay control.

According to Dr. Shearon, Labor regards the Social Security Administration as its own agency—and so long as health and medical functions are a component part of a dominantly welfare-security agency, whether it be the Federal Security Administration or a Department of Health, Education and Security, Dr. Shearon warns that "American Medicine will face the triple threat of welfare workers, social insurance groups and organized Labor."

Grant of $4,119,800 Proposed for Minnesota

Minnesota's share of the $200,000,000 allotment proposed by the National Health Bill of 1947 would be $4,119,800. This money, in accordance with the underlying principles of the bill, represents aid to this and every other state to develop their own health and medical, hospital and dental services to low-income groups.

So that public money will be spent where most needed, part of each state's allocation is to be spent for a survey of resources in the fields covered by the bill. Participating states will be expected to develop comprehensive programs during a five-year period. Voluntary methods are encouraged through the provision for use of funds for at least partial payment of premiums for persons unable to pay in full for their own voluntary insurance.

The re-introduction in the Eightieth Congress of the storm-provoking Wagner-Murray-Dingell Bill of last year by Senator Murray of Montana promises a new fight between the proponents of compulsory health insurance as recommended by President Truman, and those who believe in the use of voluntary means for distributing medical services. A showdown is expected in the Senate Labor and Public Welfare committee, to which both the Taft-Smith-Ball-Donnell Bill and the reissued Wagner-Murray-Dingell Bill have been referred.

MINNESOTA HEALTH LEGISLATION

Health in Minnesota is getting its share of attention in the 1947 Legislature, and the hoppers contain several measures aimed at correcting and improving substandard conditions in certain areas, some of which have existed a long time.

For one example—all Minnesota communities that want full-time local health officers and other health personnel shall have them, providing a bill now under study by the legislators gets their ultimate approval. This bill will enable local governments to set up their own health departments or to pool their resources with those of adjacent counties and municipalities to form joint health departments.

Figures recently published in a State Department of Health bulletin, point to a need for just such a bill as this. Minnesota, the bulletin says, has been spending around 42 cents a year for each person for health services, an amount far from adequate to fill the health needs of the people. Considering that the majority of this sum is spent in urban areas of the state, at least a million people must do without their share of preventive health services.

Minnesota's 42-cent rate is one of the lowest in the United States, the average for the forty-eight states being about 61 cents per person annually—or 19 cents higher than the amount spent in Minnesota. The Department of Health says that about $1.00 per year per person is needed to provide even minimum health services.

Minnesota Late in Establishing County Health Departments

Minnesota is quite far down the line of states to formulate permissive legislation for the establishment of local health services; if the measure passes, it will be the forty-second state to take this step. A committee, known as the Minnesota Committee on Local Health Services, formed in 1945 and including representatives of many organizations—the State Medical, Dental and Nursing Associations, labor and farm groups, co-operatives, the PTA, the League of Women Voters, the Federation of Women's Clubs and others—has been at work since December, 1946, formulating basic principles to be embodied in a measure for submission to the 1947 Legislature.

That is the history behind Senate File No. 27, introduced by Senators Wright, Wahlstrand and Burdick, which provides for the appointment of full-time health officers and sharing of expense between participating counties on a population basis, and permits financing by federal, state and county funds, and private gifts.

The Wright-Wahlstrand-Burdick Bill, after its introduction, was referred to the Public Health Committees of the House and Senate. Already reported on favorably by the Senate Committee, the bill is due to be reported on shortly by the House Committee.

Seek Aid for Public Health Nurses

A measure to provide partial financial support for every county which hires a public health nurse is now before the Legislature and has been approved by the House of Representatives. It provides an annual grant to counties for public health nursing services, payment of which is to be made in quarterly installments.

A request for increased appropriations for state mental institutions, aimed at making the "purely custodial institution" a thing of the past in Minnesota is also being discussed by the lawmakers. The bill would increase facilities of our present institutions to provide more adequate treatment for mental patients in addition to supervision and care.

CANCER FIGHT INTENSIFIED

Minnesota's proposed allotment in the 1947 appropriation of $2,500,000 from the federal government for cancer control work is $52,665. With these funds and those collected by the Minnesota Cancer Society, the fight against cancer here in Minnesota, where over 4,000 lives were claimed by this disease last year, is growing ever more intense.

An alert State Cancer Committee, consisting of Dr. A. H. Wells of Duluth, chairman, and Drs. D. P. Anderson, Jr., Herbert Boysen, E. C. Hartley, J. A. Johnson, J. F. Karn, F. H. Magney, W. C. McCarty, Sr., Martin Nordland, W. A. O'Brien and W. T. Peyton, is expanding its already active educational program. Several conferences have been held for doctors, including clinics and demonstrations of newer methods for earlier diagnosis; for public health nurses, emphasizing methods of case-finding and follow-up care; and for lay leaders, presenting lectures on the nature of cancer, its cure and prevention, aimed at dispelling fear and spreading knowledge of the disease.

At the physicians' conference held on the campus of the University of Minnesota January 2, 3, and 4, a total of 125 doctors from Minnesota, North Dakota and South Dakota attended. Lay leaders attended a conference there January 23, 24, and 25.

Additional Conferences Scheduled

Conferences are scheduled for Duluth on March 18 and 20 and for Worthington on March 25. At future dates, it is planned to hold conferences in nine other sections of the state.

Through the Cancer Committee's arrangements, the Minnesota Cancer Society recently sent out to state physicians a booklet containing thirteen issues of the *Cancer Bulletin,* prepared by the American Cancer Society and containing articles, authored by specialists in the field, covering the latest-discovered facts about cancer, as it attacks various parts of the body, the lungs, the stomach, the bladder, the genito-urinary tract, et cetera. Starting about September, a series of monthly supplementary bulletins containing later information, which can be added to the booklet, will be sent to the doctors.

In line with recent action taken by a joint committee of the American Medical Association and the National Education Association to encourage the inclusion of a study of cancer in the nation's high schools, "A Revised Study Outline on Cancer for Secondary Schools" was prepared by the Minnesota Cancer Society and has been distributed to teachers in all public and private schools in the state.

Pamphlet Contains Cancer Facts

At its last session, the House of Delegates of the American Medical Association instructed the Council on Medical Service to make a survey of the ways in which funds for cancer control work are being utilized by the various state and county medical societies. Funds available are those provided by the federal government, distributed through the state departments of health and those coming from the American Cancer Society which are utilized by State Committees on Cancer. The American Medical Association wants to make sure that these funds are administered wisely with the co-operation of the practicing physician.

VETERANS MEDICAL SERVICE

With a little over half of the physicians in the state having returned their enrollment cards, making them participating physicians in the Minnesota Veterans Medical Service, this division of the State Association officially began operations, under Part I of the Uniform Fee Schedule, on February 10.

Already, a total of 500 authorizations for medical service to veterans have been received by the division from the Veterans Administration. Most of these have been authorizations for treatment, and some have been for physical examinations.

In a complex program of this kind, the beginnings are fraught with details and routines that must be worked out until each cog of the machinery is adjusted to work smoothly. Especially at this beginning stage, the doctors who are struggling through the rolls of red tape while trying to give the best possible service to the veteran, are turning in reports of services rendered, which in a few cases are not quite up to the requirements of the Veterans Administration. In these cases the VMS must write and ask the doctor for additional information. As the program progresses, of course, and doctors become accustomed to submitting these reports, there will be less and less of this difficulty. And it is assured, with the co-operation of the medical profession of this state, the VMS will not only satisfy the needs of the veteran but will also conform to government requirements.

ACUTE INTUSSUSCEPTION

(Continued from Page 260)

Summary

1. Fifty-six patients upon whom fifty-eight operations were done for acute intussusception were studied.

2. The cardinal symptoms were found to be intermittent colicky pain, vomiting and bloody stool. These were present in 73 per cent of the cases.

3. The best results were obtained where early diagnosis was made and early treatment instituted.

4. Close co-operation between the pediatrician and the surgeon is essential.

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Minnesota Academy of Medicine

Meeting of November 13, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, November 13, 1946. Dinner was served at 7 o'clock, and the meeting was called to order at 8:15 by the president, Dr. S. E. Sweitzer.

There were fifty members and three visitors present.

Minutes of the October meeting were read and approved.

Upon ballot the following were elected as candidates for membership in the Academy: *University:* Drs. Donald Hastings and Leslie Spink; *Saint Paul:* Drs. Edward Burch and Jerome Hilger; *Minneapolis:* Drs. Ralph Creighton, Vernon Hart, Douglas Head, Stanley Maxeiner, and William Rucker.

The scientific program followed.

PERIARTERITIS NODOSUM—TREATMENT WITH PENICILLIN

S. MARX WHITE, M.D.
Minneapolis, Minnesota

Rich states that it has for some time been suspected that there may be a basic factor common to rheumatic fever, periarteritis nodosa, Henoch's and Schonlein's purpura, rheumatoid arthritis, lupus erythematosus, and quite probably some instances of glomerulonephritis. He further indicates that there are now many reasons for believing that all of these conditions may represent the effects of vascular and collagen injury caused by sensitization to a variety of different antigens. As a result of experimental study, Rich and Gregory report that typical diffuse periarteritis nodosa has been produced by establishing in rabbits a condition analogous to serum sickness in man and that the condition is one manifestation of the anaphylactic type of hypersensitivity. In previous papers they had presented clinical and pathological evidence that periarteritis nodosa has developed in patients as a result of hypersensitive reactions following foreign serum and sulfonamide therapy. As a result of their work, they state that the continued administration of foreign serum or sulfonamides after a hypersensitive reaction has occurred, or the injury of a single large amount of foreign serum, increases the danger of producing the vascular damage by prolonging the contact of the sensitized body with the offending antigen. As collateral evidence for the concept that vascular damage can be produced through hypersensitivity, they report that acute diffuse glomerulonephritis occurred in a number of the animals that developed a hypersensitive reaction to the foreign serum.

Much supportive information has been secured in recent years, an example of which is furnished by Wilson and Alexander. They report that in 300 consecutive cases of periarteritis nodosa, bronchial asthma was identified in fifty-four, or 18 per cent. Occasional apparent success in the treatment of severe asthma with bronchitis led to the suggestion that some effect might be produced by penicillin in the treatment of the case of periarteritis nodosa under discussion.

Case History

Mrs. M. P., aged seventy-three, was admitted to Eitel Hospital May 31, 1945. She was a widow, mother of three married children, one of them a surgeon in New York City. Her medical history is rich in modernistic medical and surgical procedures. The significant items include:

1. In 1936 a diagnosis was made of hypopituitarism and hypothyroidism with localized patches of a form of scleroderma. Basal metabolic rates quite uniformly in the neighborhood of minus 29 per cent; thyroid administration; also amniotin was used over a period of many months.

2. In November, 1936, uterine curettings secured because of post-menstrual bleeding showed senile endometrium with very thick-walled vessels but no evidence of malignancy.

3. In 1939, there was a diagnosis of anxiety neurosis with uterine prolapse.

4. The 1940 records show continued use of thyroid substance with basal metabolic levels between minus 5 and minus 10 per cent. In October, 1940, the labia majora and minora were excised. Microscopic examination showed marked atrophy of epithelium to the point of ulceration, subcutaneous tissues showing hyaline degeneration and round cell infiltration. A diagnosis of kraurosis vulvae was made. Postmenstrual bleeding from the uterus again indicated dilatation and curettage but the curettings showed no malignant changes.

5. In 1943, there were mild arthritic manifestations in the right knee and right index finger. The scleroderma became reactivated in the perineal region and stilbesterol, which she had been taking in minimal doses, was increased to 1 mgm. every three days.

She was admitted to Eitel Hospital on May 31, 1945, with a history of sudden onset May 28 with malaise, chills, vague body aches and pains. Following this, there was recurring chilliness and headache with fatigue. The day before admission she had difficulty in opening the mouth, with tenderness over the temporomandibular regions. There was no cough or dysuria. Examination in brief: She appeared moderately ill. There was definite swelling and tenderness of the parotid region on the left extending well below the angle of the mandible. On the right there was some swelling but less than on the left. The lungs were clear except for harsh breath sounds at the angle of the left scapula. The heart was negative except for frequent premature beats followed by compensatory pause. Blood pressure was 114/55. Electrocardiograms showed normal complexes with frequent extrasystoles from a single ventricular focus.

No rash was noted on the skin. The patellar and ankle reflexes were hyperactive but equal and normal. There was no rigidity of the neck or extremities. The impression was recorded that she had an epidemic parotitis and she was isolated.

However, with prompt subsidence of the local symptoms, daily temperatures rose to a maximum of 102.8° F.

at 4 to 8 p.m., with morning records of 99° to 100°. Occasional chilliness was noted when temperatures rose.

With persistence of the fever, studies were instituted. The urine was persistently negative. Leukocyte counts of 12,300 to 15,500 were recorded up to June 11. Myelocytes of all types constituted about 5 per cent of the leukocytes, and occasional plasma cells and leukoblasts were seen, but no myeloblasts. Heterophile antibody agglutination was atypical at 1:10 dilution. Agglutination with typhoid group and Brucella melitensis was negative.

Bone marrow biopsy, June 16, was reported by Dr. R. H. Reiff as showing neutrophilic hyperplasia of the marrow with inflammatory changes. The sedimentation rate of the red blood cells was 66 mm. in one hour.

X-ray studies showed no parenchymatous involvement in the lungs except a typical calcified Ghon tubercle in the lower left lung field. Minimal changes were noted on the vertebrae with calcifications on the walls of the aorta. There are minimal hypertrophic changes at the intervertebral joints and of the fingers.

On June 7, pain in both temporal regions was noted and there was very slight edema of the right temporal region, but nothing more than moderate tortuosity and diffuse thickening of the temporal arteries could be made out. The pain in the left parotid region was definitely diminished.

Ophthalmoscopic examination showed only sclerosis of retinal vessels consistent with her age.

On June 10, Dr. B. H. Morris noted complaint of pain in the right wrist with no local signs. Also noted—"Feels pain along the course of arm and leg veins," but there was no enlargement or tenderness over their course.

By June 18 and 19, there had been a period of lessened temperature, beginning June 16 with maxima of 100° F., and she was eating better, sitting up more, and seemed better in every way. There had been no specific therapy to which this could be assigned. At this moment she developed a throbbing pain in the right thumb with an area of swelling and redness on the radial aspect adjacent to the thumb nail and an area of redness and induration appeared on the skin lateral to the left breast. This area was about 1 cm. broad and 5 cm. long. It followed a course downward and toward the median line such as would be typical of a small superficial artery. The area was not particularly tender although the breasts were very tender and there was a general hypersensitivity both of skin and muscles. By this time, repeated blood cultures were still showing no growth (and none appeared at any time later).

On June 27 biopsy material was secured from the skin lesion and from the left deltoid muscle. Microscopic report by Dr. R. W. Koucky: The deltoid region showed no vascular lesions. The characteristic change was seen only in the subcutaneous tissue. The process affected the small arteries and an occasional arteriole. These small arteries showed thrombosis and marked thickening of the subintimal layer. All of the muscle and periarterial zone was overgrown by young fibroblasts. There was heavy, diffuse infiltration of polymorphonuclears. There were syncitial masses like malformed giant cells. The picture was typical throughout of periarteritis nodosum with the exception that the heavy eosinophilia customarily seen was absent in this case. Conclusion: Periarteritis nodosum. (Slides shown)

On the day of admission, May 31, 1945, penicillin intramuscularly had been started by a penicillin-conscious assistant but was discontinued after thirty doses at three-hour intervals and a total of 600,000 units. No effect on the fever or symptoms was noted at this time.

Following the diagnosis of periarteritis and despite the indications apparently unfavorable to its use, penicillin intramuscularly was again begun on June 28. Daily amounts of 160,000 units was given over a period of twenty-one days to July 19, with a total of 1,920,000 units. During the first fourteen days of penicillin therapy temperature rises to 103° F. continued. Then there followed prompt abatement but only to 100° and 101° F. maxima until discontinuance on July 19. During the week of July 20-27, on two occasions only, records up to 101.6° were noted, and after this time to August 19, i.e., one month, temperatures up to 100° F. were occasionally recorded. From then on to discharge on September 6 the temperature was normal, and she gradually gained in strength and capacity.

During the period of penicillin administration, transfusions from Rh negative donors were given on three occasions in amounts of 300 c.c. each, with no reactions. Hemoglobin values around 75 per cent remained essentially unchanged. When seen after discharged, on October 2, 1945, the hemoglobin was 75 per cent, red cells 3,200,000, and leukocytes 11,400.

The winter of 1945-1946 was spent in California. While there she had a relapse, the story being strongly suggestive of her old trouble outlined above. In the account of this illness, she reports that on her insistence penicillin and five transfusions were again used with slow recovery. A letter from Dr. William H. Leake, Beverly Hills, California, may be quoted as follows: "Your patient, Mrs. M. P., was under treatment at Hollywood-Presbyterian Hospital between May 4 and June 21, 1946. She received five whole blood transfusions of 300-350 c.c. each on the following dates: May 13, 14, 16, 21, and 29. Over an eleven-day period, May 10 to May 21, 700,000 units of penicillin were administered. Shortly after this treatment was instituted definite improvement was noted in the patient's condition."

She was readmitted to Eitel Hospital on October 3, 1946. She complained of the same vague pains but had no skin eruptions and no localizing symptoms. There was much headache which she insisted was similar to that she had had during her previous hospital stay. There was extreme weakness, and she continually insisted that her symptoms were identical with those of 1945 and with those during her hospitalization in California in the winter of 1945-46. She was insistent that penicillin and transfusions be tried. During her stay no rise in temperature was recorded. The blood pressure was 120/80, weight 144 pounds; general physical examination negative.

On October 4 her hemoglobin was 80 per cent (13.3 grams) with a leukocyte count of 6,000. On October 8, hemoglobin 88 per cent (14.7 grams) with red count of 4,680,000; and October 10, hemoglobin 85 per cent, red count 4,450,000, and leukocytes 6,850. Examination of the urine gave negative findings.

Penicillin in doses of 25,000 units intramuscularly at three-hour intervals up to and including October 15 was given to a total of 2,500,000 units. She was given transfusions of 250 c.c. of blood on October 7 and October 12.

During the hospital stay her headaches disappeared, vague pains no longer were troublesome, and she improved in strength and well-being at a moderate rate so that on the date of discharge, October 15, 1946, she was feeling well, walking about and said that she had improved very greatly. She has remained well and is going about quite regularly.

It should be stated here that she has not been on thyroid or estrogen therapy for nearly two years. No identifiable allergen has been found in her case.

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Discussion

Dr. A. R. Hall, Saint Paul: This is an interesting contribution. Dr. White reports a case of periarteritis nodosa which was benefited and possibly cured by treatment with penicillin. Periarteritis nodosum has been considered a condition in which the mortality is very high. However, in most cases some of the lesions histologically show evidence of regeneration.

I like the change of the name from periarteritis nodosum to arteritis nodosum since it is more descriptive of the pathological findings.

What is arteritis nodosum? Is it a disease entity or is it a tissue reaction which may be due to different causative agents? This woman was benefited by penicillin. Penicillin is apparently of benefit in bacterial infections only. If this is true, we are perhaps justified in thinking that in this case the causative agent was bacterial infection. If we may add this case of possible bacterial infection to the growing list of etiological factors which have been reported as causing arteritis nodosum, we have added to our understanding of these pathological changes. Rich has reported finding arteritis nodosum in patients who had been treated by the sulfonamides, by iodine, etc., and has produced it experimentally by the injection of foreign proteids. Selye had produced arteritis nodosum in rats by the injection of adrenal cortex.

It seems that we should classify arteritis nodosum as a tissue change which may be produced by many quite different agents.

Dr. J. A. Lepak, Saint Paul: I should like to ask Dr. White whether any effort was made to isolate or culture an organism from the removel tissue?

Dr. White, closing: There was no effort made to isolate any organism. I have been impressed, in trying to get what information we have on this case, by the welter of evidence coming forth at this time that periarteritis, or better—arteritis nodosum, is a systemic reaction, allergic in character, and by its relationship to asthma; that the relationship that Alex Wilson showed to asthma is very suggestive. One interesting point is that in some of the cases of periarteritis associated with asthma a marked eosinophilia was found in the tissues. Some of the cases reported with asthma do not show these changes in the tissues. Eosinophilia is not shown in the tissues in the biopsy material in the present case.

THE TREATMENT OF HYSTERIA BY NARCO-HYPNOSIS

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There is no branch of medicine which is attracting the attention at the present time of both medical men and lay people more than the neuroses and so-called psychosomatic medicine. It is estimated that one-third of all patients who consult a physician do not have any definite bodily disease to account for their complaints. There is another one-third of the patients who have some bodily disease but their symptoms are not explained by the disease or they are out of proportion to any discoverable pathological disease. We can, therefore, readily see what an important role emotional factors must play in the practice of medicine.

It was about a century ago that Virchow introduced the structural conception of disease and this led to a consideration of disease as a disturbance or change in the structural cells and organs. This was the foundation of gross and histological pathology. Diseases were then divided into different components of ailments and this caused the development of the various specialties and specialists and the introduction of machines of precision for diagnosis. In other words, we had the machine age and the assembly line in medicine. Out of this grew the clinic idea of the practice of medicine.

During this period of mechanical and laboratory development, many essential discoveries were made which have permitted us to better understand, diagnose and treat the structural and biochemical disturbances of the body. During this age of mechanical development the emotional and psychological background of the patient was lost and even the phase of his illness was many times held in utter contempt by many doctors.

There has been a definite change in the attitude of physicians during the past ten years and the pendulum is swinging so that again there is marked interest being shown everywhere in the so-called functional disturbances. At this point, however, I want to emphasize the importance of thoroughly studying the patient from the organic standpoint to be sure he has no structural disease before he is branded as a neurasthenic, an anxiety state, or a case of hysteria.

The treatment of the psychoneurotic often leads to gratifying results but in such treatment the art of medicine comes to the fore and the personality of the doctor is still an important factor. There must be a never failing and kindly interest in the patient, and the doctor should not complain of becoming tired of his patient.

The physician must take a very careful and thorough history and develop all the conscious emotional complications that are present or have been present in the past. This usually takes more than one interview and the physician should see the patient many times, get to know him and gain his confidence.

Freud and his coworkers and followers have pointed out that there are many emotional traumas which have occurred in early life, as well as frustrations or repressions which have been buried in the unconscious mind and produce states of nervous tension and hysterical symptoms. It was out of Freud's concept that the system of psychoanalysis was developed so that these repressions, frustrations and emotional traumae could be released and brought out into the open conscious state. However, the psychoanalytic methods were long, tedious, and expensive, and very few men were trained or had experience to carry on the procedure.

It was during the present war that the procedure of producing a trance state or a state of hypnosis by drugs was used. This semi-sleep state has recently been referred to as narco-analysis. The drugs used have been sodium amytal, sodium pentobarbital, and sodium pentothal. The patient is not given enough of the drug to produce deep sleep but he is in a dream state or a semisleep state, or in a trance. The theory is that the drugs slow down respiration and there is reduced consumption of oxygen by the brain cells and a mild state of anoxemia results.

I am going to report a series of selected cases which have been treated by narco-analysis. The method used

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Inaugural thesis.

is to dissolve 7.5 grains of one of the above-mentioned drugs in 20 c.c. of distilled sterile water. A platinum needle is used to prevent coagulation of blood aspirated from the vein when the injection is stopped without withdrawing the needle. The patient is placed in a semi-darkened room on a comfortable bed. No one else is present in the room except the patient and the physician. The injection is made very slowly and as soon as the patient complains of a numb feeling in the roof of his mouth, a slightly dizzy feeling, and a slightly drowsy feeling, the injection is stopped. The patient is able to hear what is said to him, is able to talk clearly and to answer questions distinctly.

While more barbiturate is being injected in order to keep him in this semi-sleep state, a closer hypnotic relationship is established between the patient and the physician. There is a free association of ideas. There is abnormal or extreme retentiveness of memory. Smallest details of information are related, which may seem trivial, and these become useful. Latent and repressed conflicts come to the surface. The history of mental suffering regains clarity and abnormal ideation becomes amplified. The physician obtains a quantity of information about the patient's mental state which could not be obtained during a much longer time with the usual methods. The length of time involved in a treatment may be as much as two or three hours. Every effort should be made to make the patient accept consciously the material which was obtained from his subconscious mind. This will render him more capable of viewing the past trauma in a sensible manner.

The following cases will explain more in detail the method involved.

Case 1.—A man twenty-two years of age, unmarried, was brought in six years ago by ambulance from another city. He would not talk, open his mouth, or move his arms or legs. He would only sit in a chair, with his eyes closed. He defecated and urinated in the chair or in bed. He had to be dressed, undressed, and carried into the bathtub. He would not open his mouth to eat and had to be tube fed. There was a history of acute onset about two weeks previously, and also a history of a somewhat bashful fellow who was a good student in school and conscientious in his work. He was a college graduate and his occupation was that of a pharmacist. He was observed for several weeks, and there was no improvement. He was tube fed during this time. Our impression was one of an acute attack of schizophrenia of the catatonic type.

Fifteen grains of sodium amytal were dissolved in 20 c.c. of sterile distilled water and injected slowly into his vein at the elbow. After a few c.c. were injected, the patient opened his eyes and looked around. He was asked questions, was encouraged to talk, and slowly unfolded the following story. About one year previously, he was taken, one evening, by a bunch of fellows by force as he was leaving the drug store to a house of prostitution. He was undressed, placed in a room with a group of nude girls, and the fellows were also present. The girls coaxed him to have relations with them but he refused, and then they attempted all sorts of perverted practices upon him. He said he was terribly frightened, his heart beat rapidly, he perspired and could not talk. They kept him there for several hours, then dressed him and pushed him out the front door. He found his way home, was in a very nervous state, and was afraid his parents would find out what had happened. The same fellows continued to come around the drug store, teasing him about the matter, and threatening to do it over again. He lived in constant anxiety and fear until he said one day it seemed as if he was unable to think, or to move or to talk. He related that he wanted to talk, to obey instructions, to go to the bathroom and to eat his meals, but he could not. In this dream state he was assured that he would be all right, and further sodium amytal was injected until he went to sleep.

Upon awakening, he got up out of bed, went to the bathroom, carried on a conversation with the nurses in a normal manner. He remained in the hospital for several weeks and I discussed the matter fully with him but never referred to what he related to me with anyone else. Six years have now elapsed. In the meantime he has married and I have seen him on numerous occasions. He has never had a recurrence.

Case 2.—This patient is a twenty-four-year-old married woman who has two children, six and four years of age. She had a high school education. Her general health had been good and she had had no operations.

Her present complaint was that of slapping her chest with the right hand, over a period of six years. This came on during the time she was pregnant with her first child. The previous diagnosis had been one of postencephalitic syndrome. A neurological examination was negative except for this constant slapping of the right side of the chest with the right hand during her waking hours. The spinal fluid examination was negative. She had been treated with rabellon, stromonium, and sedatives.

I saw her on frequent occasions over a period of six months and could not elicit from her anything of an emotional character in her past history. It was my impression that the constant slapping of the right hand against the chest was not due to any organic disease of the central nervous system. She was finally hospitalized and given pentobarbital sodium intravenously. After a few c.c. were injected, the slapping ceased and she became very quiet. She complained of a numb feeling in the roof of her mouth and she said she had a feeling of well-being. She was then asked what had been bothering her or what had happened to upset her and make her nervous. She said that when she was a senior in high school she was going with two boys. She had had sexual relations with both of these boys. One month she did not menstruate and she knew she must be pregnant but she did not know which boy was the father. She was frightened about her condition and was afraid to tell her mother who was a strict disciplinarian and unduly religious. She did not know which boy she wanted to marry or which one she should blame for her pregnancy. Her nervousness increased and she finally decided to choose one of the boys and get married. She told the boy and they eloped and were married. Each boy did not know about the other boy having had relations with her. They came home after the marriage and announced their marriage to their respective families but did not tell of the pregnancy. About this time she noticed some shaking of her right hand and this continued to get worse during her pregnancy. Up to this time no one except her husband had ever been informed that pregnancy started before marriage. She had also never informed her husband of the other fellow and the possibility that the child did not belong to him. She stated that she lived in constant fear during these years that her husband might in some way find out about the whole matter and also that her mother might find out that she had been pregnant before her marriage. The twilight state was continued for about two hours in order to receive all of this history. She was told that the slapping of her right hand had come about because of all this emotional conflict and that when she awakened it would all be gone. Enough pentobarbital was given to her so that she went to sleep. Twelve hours later when she awakened, she was nauseated and vomited, but there was no subsequent tremor or slapping of the right arm and hand. The whole matter has been discussed with her subsequently. She has gained weight and is getting along satisfactorily at home. Eighteen months have now elapsed without any return of symptoms.

Case 3.—A married man, aged fifty-two, government employe, lives in a small city. He was brought to my office in a wheel chair. He had not walked for five years. The history was that five years previously, on a cold winter morning, he was on his way to the office when he slipped and fell on the sidewalk. He had a pain in his back and in one hip, but after a short while he got up. He walked eight or ten blocks to his office, attended to some work, and then went to a luncheon meeting at a hotel. During the time he was at the luncheon meeting he had a weak feeling, and perspired. After lunch he walked into the lobby of the hotel and sat down because his legs were getting weak. He was taken home in a cab and by the time he reached home his legs had become very rigid. He was taken to a hospital where x-rays of his spine, pelvis, and hip joints showed no abnormalities. A spinal fluid was negative. He was told by one of the attending physicians that he had experienced damage to his spinal cord and that he would probably never be able to walk again.

At the time I first saw him, the neurological examination showed no sensory disturbance, no difficulty in bowel or bladder control, no great toe signs, no angle or patellar clonus, and the deep reflexes were within normal limits. The muscles of the legs were held flexed at the knees and in a state of spasm but the degree of spasm was not like an organic spasm but seemed to be to some degree intermittent. Another spinal fluid was negative.

He was put in the hospital, given a small amount of pentobarbital sodium and in a few moments his muscles were completely relaxed and he then told me how frightened he was when he fell down. He thought he could not get up, that he would freeze to death before any one would find him. On the way to the luncheon meeting his heart pounded in his chest, he perspired profusely, and a peculiar sensation came over him. In the trance state, he moved his legs freely in bed, we got him out of bed and he walked down the corridor of the hospital and back to bed. As he walked down the corridor, the syringe and needle were kept intact in his vein. He returned to bed, we gave him some further barbiturate and he went to sleep. Within two hours he wakened and his legs still had fairly normal tone and he moved them around in bed. However, within another couple of hours his legs gradually became spastic again. We repeated the treatment on at least a dozen occasions and several times were able to get him to walk up and down stairs and go onto another floor of the hospital. On at least one occasion the spasm did not return until about four hours after he wakened, and during this time he walked around in the hospital without any help. During his conscious state and before the spasm recurred, I discussed the whole matter with him but each time he would tell me that eventually his legs would become spastic again.

I consider this case a failure, but a most interesting experiment.

Case 4.—A married woman, fifty-five years of age, without any children, suddenly lost her voice about eighteen months before I saw her. Her husband accompanied her to the office and could give no explanation for her aphonia. The only way I could interview her was to write the questions, and she gave me the answers in writing. I could get no past history of instability from her husband. He stated he had come home from a business trip and found his wife speechless. They lived in another state, and she had been treated with vitamins, throat sprays, and by osteopaths and chiropractors.

The neurological examination was entirely negative. There was nothing in the physical examination of any consequence. I sent her to a very competent nose and throat man, and he reported to me that he could find no evidence of any disease of her larynx and that there was no paralysis of the vocal cords.

Under narco-hypnosis she gradually began to talk; at first she only whispered and then gradually the volume and quality improved. She stated that she lived alone and that her husband was gone on business for protracted periods of time. They never had any children and she was very much attached to her husband. Over a period of years on four or five occasions her husband had suffered attacks of hemorrhage from a duodenal ulcer. While out on the road he would have to be hospitalized and she would get a telephone call to go and see him in some distant town. She said she lived in constant fear that he would die in one of these attacks. About two months before her aphonia occurred, he had had another attack, was urged to have an operation, and had refused. She was terribly frightened over the prospective surgery and what might happen to him. She was also afraid he would die as a result of one of the hemorrhages. The day before he arrived home, the telephone rang and she could not talk when she picked up the receiver. She had not talked since. The whole situation was one of fear and anxiety, and her own worry her husband's possible death from either operation or recurring hemorrhage. Her loss of voice was a conversion type of hysteria which arose out of this conflict. Upon awakening she talked in a mild, low tone of voice, and during the next week her ordinary voice returned to its normal state. The whole matter was discussed frankly with her after the narco-hypnotic treatment was over.

Nine months have now gone by and she has had no more difficulty. Her husband has not had any surgery done and he has had no further hemorrhages.

Case 5.—A widow in her late fifties, who had been employed for many years as a clerk for the Soo Line, had not talked for about a year when I saw her two years ago. She had been treated for chronic laryngitis without any benefit. I had her examined by Dr. Larry Boies, and he found her vocal cords to be normal.

Her neurological and physical examinations were negative.

She was given pentothal sodium, and in the trance state she told me about the death of her husband some ten years ago. She was left with a daughter in her teens. After the death of her husband she had to go to work. She was very much attached to her daughter. The daughter had finished high school and was working and they were getting along very well. Two years before I saw her the daughter developed acute appendicitis and was operated upon. She got along very well in the hospital and was taken home on the eighth day. As she was taken from the automobile into the home, she slumped over and was dead when she was finally brought into the house. The mother was with her at the time. The mother told me that some time later during the day she had a queer feeling come over her and she could not make a sound.

After she awakened from the sleep, she talked normally and continued to talk in a normal manner. I heard from her frequently until April of 1946 when I received word that she had died suddenly and that an autopsy showed a coronary thrombosis.

Case 6.—This is the case of another middle-aged woman with an hysterical aphonia who was seen by Dr. George Tangen, who is associated with Dr. Boies. He was unable to find any disease of the larynx.

The physical and neurological examinations were negative, and the spinal fluid was negative. The underlying problem of an emotional character was the drinking and gambling of her husband and also her only child, a daughter, who was married to a man whom she did not like. She regained her voice and was all right for a month and then lost her voice again. She returned for further therapy. She regained the use of her voice for another three months and now she cannot talk again. The underlying problem with her husband and her daughter still remains the same.

Case 7.—A married man, aged thirty-two was referred to me by an insurance company, because of intermittent jerkings of both arms and legs. These jerkings occur every afternoon and evening.

This man fell down a church steeple in Duluth, a distance of 80 feet, in 1940. He landed on a salamander. He fractured his pelvis and one hip, and received some third degree burns on his back. He was hospitalized a long time and finally left the hospital after almost a year's stay. Sometime later in 1942, he had an occasional muscle twitching in his body which occurred toward the end of the day. He was married in 1942 and he has one child. He has been able to work but toward the end of each day, this intermittent jerking occurs. He stated that doctors had told him it was the nervous shock from the fall.

The neurological examination was again negative except for the body jerking.

Under narco-hypnosis he told me the following story. While in the hospital following the accident, he fell in love with his special nurse and after he left the hospital he saw her frequently and wanted to marry her. He had sex relations with her quite frequently. However, she did not want to marry him, and she went east to get another position. While the nurse was gone he met his wife and married her, although he was not in love with her. His wife is frigid and rather quiet. Her family visits them a great deal and he dislikes it. All in all, he is unhappily married. His wife does not know about the other girl. He stated that while at work he does not have to think of the other girl but when he comes home at night he sits down and dreams about her. He also stated that when he thinks of the nurse he almost always has the picture of himself falling down the steeple. Then he seems to jerk his body.

While under narco-analysis, the whole thing was discussed with him from an emotional and intellectual standpoint. He has had three treatments and was seen several times between treatments. The whole matter was discussed with him, and he now seldom has any jerking.

Case 8.—This was an unmarried woman, forty-two years of age, who was referred to me by an orthopedist. She had an excellent position with one of the advertising agencies in the Twin Cities. Her immediate complaint was that when she walked, she turned her head toward the left. This never occurred when she was sitting or standing, but as soon as she started to walk her head would turn to the left. If she put the tip of a finger against her chin, then her head would not turn. If she walked with a pencil or a cigarette in her mouth, then her head did not turn to the left. Even if she had a thread between her lips when she walked, her head did not turn.

This woman had been examined and re-examined by various competent people and no explanation had been given her for this turning of the head except she was told it was a habit.

Under pentothal sodium she related a long series of emotional difficulties in her past life. When she was fifteen years old her local neighborhood butcher attempted to have sexual relations with her in the back part of the butcher shop. She says she was terribly frightened and never told anyone.

Later, she met a man in Iowa, was engaged to him, had relations with him, but the engagement was broken off. Subsequently this man went to Chicago and was married. Some years later, our patient met him again in Chicago and over a period of time they carried on illicit relations. She told me that she had to be transferred to another city in order to get away from him. When she reached another city, she got along in a satisfactory manner for a while until she met a group of men and women. At a party one night, the lights in the house all went out and she realized that everyone there was having sexual relations. The fellow she was with attempted to have relations with her but she would not have anything to do with him. When the lights finally came on the rest of the members of the party made fun of her and she was in a very embarrassing position. A few days after this experience, she noted the phenomena of her head turning to the left. It took some two to three hours for her to relate all of her experiences in the past.

A week later she returned to the hospital and remained another twenty-four hours and was given another injection of pentothal sodium. She related many of the details of her past experiences again and added others to them. Subsequently I saw her several times in my office and we went over all the experiences which she had related to me under narco-hypnosis. Three months have now elapsed and the last time I saw her she told me there was no more turning of her head to the left. She does not have to put a pencil in her mouth or smoke a cigarette or put the tip of a finger to her chin in order to keep her head from turning.

Case 9.—This is the case of a twenty-five-year-old ex-service man who awakened every night between 1:00 and 5:00 A.M. with pain in his left lower abdomen. He would get up and walk the floor or take a hot bath or smoke cigarettes for a couple of hours. The pain was intermittent in character. He had been examined by the army and by several clinics, and a diagnosis of a functional neurosis had been made. He was the son-in-law of a physician, and the physician had gone to no end of trouble in trying to find some organic basis for this pain.

Under narco-hypnosis the patient told of a very exciting experience, when he was about twelve years old, which occurred on the north shore of Lake Superior. He was in a cabin with his parents when lightning struck the cabin and it partially burned during a heavy rain storm. He became very tense and nervous, could not talk, and had to be carried into another bed. Following this experience, he stated that he had always been very tense and unable to relax. When he was attending the university, he would be very much upset at the time of examinations. He finally went into the army and was in the air corps. Every time he had to make a flight, and especially if the flight was at night, he was very distressed and when the plane landed he would frequently be unable to get out of the plane for a matter of five to ten minutes. It was while he was in the Pacific that he began to have the attacks of pain in his abdomen at night.

This fellow has had three treatments, and the pain has disappeared at night. He is still having attacks of pain to a lesser degree in the daytime and still has a feeling of nervousness and tenseness.

Case 10.—This woman, whom I have seen recently, is about fifty years of age. She shrugs her shoulders. This shrugging of her shoulders occurs during the daytime but is gone during sleep.

Under drug hypnosis, she told about her husband's drinking, gambling, going out with other women, and how her only daughter had become pregnant and had a baby out of wedlock. She is still in the hospital and the shrugging of her shoulders has not entirely disappeared, but she is much better.

Conclusions

1. Drug hypnosis is very valuable in obtaining history which otherwise could not be obtained.

2. It brings out of the unconscious many emotional conflicts, repressions and frustrations. It gives one an

opportunity to discuss these matters with the patient and synthesize them in the conscious state.

3. It is not a cure-all for functional nervous cases but it is certainly of great value in selected cases of conversion hysteria where other methods have failed.

4. All cases of conversion hysteria do not respond to this type of treatment but there is a sufficient number of cases which do respond to make it a very valuable therapeutic measure.

Discussion

Dr. Hannah: There is another feature in narcohypnosis that offers a very interesting future. A man, recently referred to me by the United States Shipping Corporation, complained of inability to hear when he was tested on the audiogram. The audiogram showed an 80 per cent loss of hearing in each ear. However, this man could hear ordinary conversation without much difficulty. In conjunction with one of the otologists, we put this man through the tests when he was in a state of narcohypnosis. In this state, he could hear very much better, and the loss of hearing was only about 20 per cent. This test was repeated under narco-hypnosis four times with practically the same results. When the man awakened four hours later, he had no memory of the tests.

This offers a very fruitful field for determining alleged loss of hearing or loss of sight in medicolegal matters.

The meeting was adjourned.

A. E. Cardle, *Secretary*

POLIO COSTS IN MINNESOTA

Approximately $2,000,000 will have been expended in Minnesota by the National Foundation for Infantile Paralysis to combat the 1946 polio epidemic before the last case can be considered closed, according to Charles B. Rogers, state campaign chairman for the annual "March of Dimes." This total represents half of the epidemic emergency fund for the National Foundation and more than two times the contributions of Minnesota residents to the "March of Dimes" since it was launched in 1938.

This sum represents costs of medical, nursing and physical therapy care, hospital bills, salaries and maintenance of nurses, and equipment. More than 900 nurses, 40 physical therapists, two epidemiologists, 43 respirators, 60 hot pack machines, 18 suction machines, and some 2,400 pounds of wool for hot packs were sent into Minnesota during the epidemic. Personnel and equipment were rushed in by planes, trucks and trains.

"Next to the Minneapolis General Hospital," Mr. Rogers reports, "the Kenny Institute received the largest contributions of any of the six Minneapolis hospitals used for the care of polio patients—more than $46,000. In addition, more than $24,000 of doctor and hospital bills were paid for patients who received the Kenny treatment in the Kenny Institute."

The University of Minnesota, since 1938, has been granted $699,243 by the National Foundation for investigation, research, and short courses for physicians, nurses and physical therapists.—*Bulletin*, Hennepin County Medical Society, January, 1947.

GETTING THE MOST FROM A PATHOLOGIST

(Continued from Page 279)

Most of the autopsies in the country today are being done by relatively untrained and inexperienced men. Attention to detail is of first importance. The cause of death will be found in the great majority of cases without microscopic study, but sections will add greatly to confidence in gross conclusions. A few blocks of tissue in 10 per cent formalin can be submitted to the pathologist, along with a copy of the clinical history and gross findings. With knowledge of the diagnostic problem at hand, he will prepare a tissue report with relevant information. The doctor should always request these slides and study them.

If the autopsy problem is one of possible poisoning, the tissue must not be formalized. Generous specimens of blood, urine, heart, liver, spleen, brain, stomach, and gastric contents, are packed in ice and sent either to the coroner of Hennepin or Ramsey county or to a toxicologic laboratory recommended by him. There are very few good laboratories of this type in the state. The University of Minnesota has no facilities for toxicologic diagnosis.

It has been the intention of this paper to present some of the advantages and shortcomings of pathologic examination and to suggest that too little information is forwarded with specimens. The pathologist can profitably use clinical findings when studying tissue but usually is forced to do without them. The clinician who wants the ultimate in diagnostic accuracy will properly prepare his tissues for examination and will write a history. The preparation of such a report to accompany each specimen consolidates the ideas of the doctor and stimulates the interest of the pathologist.

The single flaw in the remarkable progress in the control of tuberculosis in the United States is the fact that the disease is still a major cause of death, killing more Americans than all other infectious and parasitic diseases combined. In spite of a constant search for drugs to effect a lasting cure, no substance has been found that is completely satisfactory. Various sulfonamides, although capable of modifying the disease in experimental animals, have proved too toxic for continuous use in human patients, and streptomycin, which provides considerable protection, has not effected permanent cure. Since no specific remedy has been discovered, the accepted methods of treatment which have obtained excellent results in a great many cases, must be relied on. Editorial, New England J. Med., (Dec. 5) 1946.

Minneapolis Surgical Society

Stated Meeting Held December 5, 1946

The President, Thomas J. Kinsella, M.D., in the chair

SURGICAL MANAGEMENT OF CHRONIC FISTULAS OF THE RECTUM FOLLOWING PENETRATING WOUNDS

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This paper presents a discussion of sequelae of a type of injury which fortunately is rare in civilian practice, but which was a not infrequent occurrence during this past war. It deals with injuries to the infraperitoneal portion of the colon which were caused by missiles entering the dorsum of the body, penetrating the rectum, and resulting in persistent chronic fistulas in this region.

Much has been written recently regarding wounds of the rectum and infraperitoneal portion of the large bowel. The initial surgical treatment and the definitive treatment have been discussed in detail. Nevertheless, I wish to describe my experienc in the surgical management of seven cases of this type of fistula. By chronic fistulas is meant such as have persisted for three to five months since injury despite diversion of the fecal stream by colostomy. Such fistulas communicated in all instances with the posterior or posterolateral portion of the extraperitoneal rectum, and the external openings were found in the sacrococcygeal and right and left buttocks regions at the location of wounds of entry of the missiles.

When first seen, such patients all had good functioning colostomies and their chronic fistulas were apparent on the dorsum of the body. In some cases there was a healed, depressed, firm, fixed scar on the right or left buttocks, in the center of which the external orfice of the fistulous tract could be seen; in others there was a clean granulating wound, in which the fistulous tract opening could be identified. On evaluating the direction, depth and extensiveness of the fistulous tract, several diagnostic measures were used including barium enema (to check patency of the distal loop also), lipiodol injection, methylene blue injection, digital examination of the rectum, proctoscopic examination and probing of the wound. In all cases the extent of the fistula was ascertained readily and in most of the cases a probe could be inserted through the external opening and could be felt in the lumen of the bowel by the examining finger. Barium enema alone was not very helpful as it was difficult to introduce barium into the small sinus tract in some instances. However, in the lateral view, the barium enema usually showed a posterior tenting of the rectum, and this deformity caused by adherent scar would demonstrate the location of the internal opening. There were three defects which were quite large and would admit the tip of the examining finger in the internal opening.

History

A typical history given by the seven patients up to the time they entered our hospital was that of a young soldier from twenty to thirty years old who was wounded in the buttocks or sacrococcygeal area by gun shot or shrapnel. He was admitted to an aid station, then a surgical evacuation hospital, where treatment was instituted.

Three patients received minimal debridement and abdominal exploration at the surgical or evacuation hospitals. Retroperitoneal hemorrhage was found, injury to the rectum suspected and colostomy performed. All three patients later displayed fecal fistulas through the entrance wounds. Two of the seven patients were treated ideally. The wound of entrance was debrided, and it was apparent that the recum had been perforated. In such cases the rectal wound was closed, the wound packed open loosely and sigmoid colostomy performed. In one soldier the wound was debrided and packed loosely, and in this instance abdominal pain resulted together with signs of abdominal injury. A celiotomy was performed but nothing except retroperitoneal or infraperitoneal hemorrhage was apparent, and the abdomen was closed. A fecal fistula developed within two days in this soldier and it was necessary to make a loop colostomy. Immediate treatment of one soldier who had a large posterior bowel perforation consisted of debridement only and, due to other wounds, shock was present and was treated. On the fourth day after injury he improved and it became evident then that a fecal fistula was present. Colostomy was performed. All seven soldiers were given careful and adequate supportive treatment and were evacuated to the zone of the interior.

On arrival at our hospital all seven patients presented the chronic fistulas described above. Their general condition was good. The abdominal wounds were healed and all colostomies were functiong adequately.

All seven soldiers had had early surgery following the injury and one important principle was carried out in all, i.e., the perirectal space was drained by incision and debridement. In two patients the ideal treatment was instituted initially; that of incising and draining the perirectal space by debridement, then locating the perforation, and closing this opening into the rectum, followed by colostomy. Unfortunately, in both soldiers

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Inaugural thesis as a member of the Minneapolis Surgical Society.

From the Surgical Service, Billings General Hospital, Fort Benjamin Harrison, Indiana.

chronic fistulas resulted, but I am certain that a great many similar wounds to the rectum were healed in this manner. Croce[1] cited two instances of spontaneous closure of rectal fistula following colostomy alone. There were many other similar instances, no doubt.

It is difficult to determine why such fistulas persist. In all of the soldiers I operated on, the mucosa was everted and markedly adherent to the dense scar tissue which resulted from the healing by secondary intention. In three patients the coccyx had been removed in the original debridement. In two, the badly comminuted coccyx was still present and fixed in the surrounding area by scar tissue, and in the remaining instances the coccyx was undisturbed.

Surgery

Operation was performed in all seven soldiers. The fistulous tracts were excised, the perforations closed and the wounds packed open to permit healing by secondary intention.

Preoperative preparation consisted of irrigating the distal loop, following which all fluid was aspirated. Usual preoperative medications were given, and low spinal anesthesia was used in all instances. A suspension of sulfasuccidine was instilled into the distal loop daily for three or four days preoperatively to decrease the bacterial flora.

At operation almost all of the scar was excised by elliptical excision. The incision was carried toward the midline when the external opening was in the lateral buttocks and the coccyx or fragments of coccyx were removed if present. Very good exposure resulted. The fascia propria was incised transversely in the midline for additional exposure, and by means of blunt dissection through the areolar tissue the proximal rectum was identified as described by Murray.[2] In two patients the perforation was identified at the tip of the fifth sacral vertebra, and in both the everted mucosa was attached firmly to the anterior aspect of the sacrum by osteoperiosteal scar tissue. Removal of the fifth sacral segment by rongeur and stripping of the bowel from the periosteum were necessary in order to mobilize the rectum. In all instances the perforation was identified and the scarified margins excised. The rectal segment was mobilized sufficiently in large perforations to make transverse closure possible, thus preventing undue narrowing of the lumen. With an opening less than one centimeter in diameter, the scarred margin was cleaned and closure made in the direction of least tension, sometimes by purse-string suture. Two rows of inverting interrupted chromic catgut 000 were used in all seven cases. The finger was inserted in the rectum to ascertain a complete closure. Sulfathiazole powder was dusted into the wound and a boric ointment-laden gauze was packed lightly into the defect. A few deep interrupted silk sutures were placed in the lateral extremes of the incision in order to close some of the dead space, but such merely diminished the size and extent of the wound which was to heal by secondary intention.

Postoperative Care

The packs were removed within twenty-four hours and a light cradle was applied to keep the wound dry. Sulfathiazole again was dusted into the depth of the wound and the cavity packed lightly with dry gauze. The wound was dressed daily until healed in three to five weeks. Two or three days after operation all patients were permitted to be up and about the ward. All wounds healed solidly except one which broke down on the seventh day. In this patient the spur of the colostomy was below the skin surface and feces entered the distal loop. I believe this was the main factor in the recurrence, because, after reconstruction of the colostomy and adequately diverting the fecal stream, the fecal fistula was again operated on in the above described manner and healed completely.

In all these soldiers the colostomies were closed while I was still in the army, and there were no recurrences. The most recent colostomy closure was followed for only three weeks. At that time the patient was having normal bowel movements, and the posterior wound was well healed.

Discussion

Perforation of the rectum must be suspected in instances of penetrating injury to the perineal, sacrococcygeal region, or buttocks. Usually a perforation can be seen by proctoscopy or identified on digital examination. If much blood is seen in the rectum, bowel damage usually is present. With bleeding from the rectum and lower abdominal pain present, exploratory operation is indicated if condition of the patient permits. Any injury to the colon above the peritoneal reflection can be repaired and, if retroperitoneal injury is suspected by evidence of hemorrhage in the retroperitoneal space, exclusion colostomy may be performed. Following this procedure, it is important to debride the wound of entrance and adequately drain the perirectal space. If a perforation is seen it should be sutured. If no perforation is seen, the space should be drained, nevertheless, to guard against possible later perforation which may occur because of infarction or contusion of the bowel wall. The colostomy will control the sepsis by eliminating gross contamination and reducing the intraluminal pressure. In addition the incidence of secondary hemorrhage and even perforation of the bowel may be reduced by colostomy. A few cases reported in the literature with perforation of the rectum have had the above ideal treatment, yet fecal fistula has resulted. This may be accounted for by (1) inadequate closure of the perforation, (2) not inverting the mucous membrane and approximating the serosal surfaces of the bowel, (3) the presence of too much infection, (4) a colostomy which does not completely divert the fecal stream or (5) inadequate blood supply as a result of the injury. When the bowel wall is everted and adherent to surrounding structures by scar, there is little chance of the fistulas closing. Many fistulas will heal by conservative means, and some will heal intermittently, only to break down later.

In patients who develop chronic fistulas in spite of the above program, another operation should be performed.

After exposing the area adequately the bowel segment is mobilized sufficiently to close the perforation without tension and the wound allowed to heal by secondary intention.

It is fairly well established that the majority of fecal fistulas of the abdominal colon will close and heal spontaneously, providing the lumen of the bowel is adequate to permit the passage of feces in this area. Further, fistulas from the infraperitoneal colon secondary to operation for low-lying carcinoma with low resection of the rectum usually will heal spontaneously. But with chronic fistulas herein discussed there is little or no chance of spontaneous healing because of trauma, scar tissue, poor blood supply and absence of peritoneum, and surgical repair is certainly indicated.

Summary

Seven soldiers were operated upon for chronic posterior fecal fistula which communicated with the infraperitoneal portion of the rectum following injury by shrapnel and gun shot.

All patients had been operated upon in overseas installations. The wounds of entrance had been debrided and colostomies performed.

There was no evidence of osteomyelitis of the coccyx or sacrum present in any of these cases, in spite of the persistence of mucopurulent and fecal drainage from the fistulas.

The seven patients were treated in a standard manner. The fistulous tract including the surrounding scar tissue down to the bowel wall was excised. The rectum was mobilized adequately, margins of the perforations freshened, and the perforation closed by two rows of fine chromic catgut suture inverting the bowel wall. The wounds were packed lightly with gauze and allowed to granulate in.

Wounds healed readily without complications in six instances and the colostomy was closed later without recurrence of the fistulas.

One patient failed to heal. An inadequate colostomy was reconstructed so that the fecal stream was diverted completely. A further operation was successful and the colostomy was closed later.

References

1. Croce, Edmund J., Johnson, Vansel L., and Wiper, Thomas B.: Ann. Surg., 122:408-431, 1945.
2. Murray, Gordon: Surg. Gynec. & Obst., 82:283-289, 1946.

Discussion

Dr. Wallace I. Nelson: Allow me to insert a few words about prophylaxis. Now that the war is over it is a little late to prevent these complications in battle casualties, but the principles hold for injuries in civilian life. In studying a large number of these patients with colostomies returning from overseas, I found that a number were not properly defunctioning the distal loop. There were also a large number of patients with wounds of the rectum who merely had a colostomy established but did not have the pararectal space drained until an abscess had formed. As a matter of prophylaxis, I think that the establishment of a truly defunctioning colostomy and the early drainage of the pararectal space would prevent some of the chronic fistulas.

Dr. John R. Paine: I would like to point out one other thing. Doctor Tenner's selection of these cases represents a group of patients which presented as many difficulties as any type of wound which medical officers saw. I think that type of wound, if one excludes the thoraco-abdominal wounds, had about as high a mortality as any in the major categories of wounds. In such cases it was found best by experience to operate on the pelvis first and the abdomen last. This was largely due to the matter of shock occurring with shifting the position of the patient. Frequently, he had to be turned over on the abdomen in the Kraske position to have pelvic surgery done and withstood the shock much more poorly than if the pelvic surgery had been done first.

PULMONARY DECORTICATION FOR INFECTED ORGANIZED HEMOTHORAX

Report of a Case

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Minneapolis, Minnesota

Pulmonary decortication was described originally in 1893 by Fowler,[4] who advocated the procedure in the treatment of chronic empyema. For various reasons the operation was not widely accepted until World War II. Decortication carried out early in the course of an empyema usually resulted in recurrent or spreading infection. Postponement of the procedure until the empyema cavity became relatively sterile resulted in overmaturity of the fibrin wall which made stripping impractical or impossible. In the treatment of organized hemothoraces in the war wounded, the advent of effective chemotherapeutic agents and antibiotics was very timely. By their use, septic complications were reduced to a minimum and the time of surgical intervention became elective. In these cases, pulmonary decortication attained such notable success that the procedure possibly should be re-evaluated as to its place in the treatment of empyema.

It appears that even in experienced hands at least 5 per cent of all significant acute hemothoraces result in either empyema or a chronic organizing phase in spite of various methods of therapeutic management.[2,6] The chronic phase is characterized by the development of an intrapleural, space-occupying, fibrous envelope usually filled with a viscous, plasma-like liquid, containing fibrin shreds and the debris of degenerated red blood cells. The exact pathogenesis and mechanism of this change are not entirely clear but, at least under certain circumstances, whole blood in the pleural cavity apparently lays down its fibrin content on all pleural surfaces bounding it. The constant thrashing movements of the diaphragm, mediastinal wall, and thoracic wall possibly stimulate this fibrin deposit on the moving parts in much the same manner as occurs when whole blood is stirred with a spatula.[3] Simultaneously, red cell degeneration begins at the center of the hematoma in the defibrinated blood, which is much diluted by effusion from the easily irritated pleura. Early in the course of events, while fibrin is still being laid down about the periphery of the hematoma, active fibroplasia and angioplasia begin in the fixed fibrin nearest the pleura.[1] This proliferative process proceeds from the pleura towards the center of the hematoma and, in about three weeks,

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results in the formation of adult fibrous tissue in those portions nearest the pleura. This organizing fibrous wall has been given the name of "peel." If undisturbed surgically or otherwise, the peel and the underlying pleura are said to attain cellular intimacy in about eight weeks.[1,3]

A markedly decreased vital capacity produced by the persistent space-occupying lesion is the most pronounced physiological disturbance of an uncomplicated organizing hemothorax. The immobilization of the diphragm and mediastinum further disturb normal physiology and may give rise to symptoms. The collapsed and partially atelectatic lung is very prone to abscess formation, bronchiectasis, or pneumonitis. The nutrient-rich fluid contained within the peel is also particularly subject to infection and to the development of complicating empyema.

Organized hemothorax does not produce any particularly diagnostic symptom complex. Its development in carefully followed chest injuries is usually obvious, but many cases are asymptomatic until supervening infection precipitates signs. As has been pointed out frequently, the history of significant chest trauma may be misleading or difficult to elicit. Nonspecific symptoms such as chest pain, dry cough, dyspnea, malaise, anemia or weight loss may direct attention to the chest. Hemoptysis, foul sputum, chills, and fever usually are the results of complications, but often provide a lead. The history of even insignificant chest trauma; the clinical and roentgenological demonstration of an immobile, persistent, space-occupying, intrapleural mass; and the aspiration of blood or degenerated products of blood from the mass usually suggest the diagnosis.

Since atelectatic lung and the degenerated center of an organizing hemothorax are both very prone to develop infection, the primary aim of surgery must be the complete re-expansion of the lung with obliteration of all dead space. In cases where more than 50 per cent of a pleural cavity is involved, this can be accomplished best by evacuation of the liquid contents of the mass and removal of that portion of the peel actually constricting the lung. Normal respiratory physiology may be re-established further by removing the constricting peel from the diaphragm. Since the peel develops adult fibrous tissue in its deep layers after three weeks and does not attain cellular intimacy with the underlying pleura until eight weeks, this is the ideal period for decortication. If decortication is attempted too early, the peel will not have attained sufficient intrinsic strength to allow easy surgical manipulation. If allowed to mature too long, the peel can be separated from the underlying pleura only with difficulty, and much capillary bleeding results. In this over-mature stage decortication may result in such extensive tearing of pleura and lung tissue that Ransohoff's discission operation[5] may be the procedure of choice.

By proper use of effective chemotherapeutic agents and antibiotics, pulmonary decortication may be carried out successfully even in the presence of infection within the hematoma. Burford, et al.[1] report nineteen cures out of twenty-five cases of infected organized hemothorax treated by decortication. The remaining six developed small basal empyemas requiring further minor surgery. From this and other reports of comparable success in the treatment of this special type of empyema, it is interesting to speculate that, with the development of further improved bacteriostatic and bacteriocidal agents, pulmonary decortication may become the treatment of choice in the management of most empyemas.

Recently at the Minneapolis Veterans Hospital a pulmonary decortication was performed successfully for massive infected organized hemothorax. As a reminder that this condition occurs in civilan life and as evidence of the effectiveness of the procedure in spite of existing infection, the case is reported in some detail.

Case Report

A railroad lunch concession clerk, aged fifty-five, was admitted to the Minneapolis Veterans hospital, August 6, 1946, with a history of having sustained minor lacerations of the right elbow, the right knee, the frontal scalp and the right anterior chest the night of June 24, 1946, when he tripped over a railroad tie while returning home from work. The lacerations were sutured and dressed by his family physician who was consulted the same night. There were no significant symptoms, and the patient continued his usual work for about two weeks thereafter.

On the night of July 8, 1946, the patient experienced a sudden, rather oppressive dyspnea when he arose from bed to urinate. Severe sharp pains in the right lower chest began at the same time. The pain was most marked posteriorly and was made worse by deep respirations. There was no cough, sputum, or hemoptysis. Weakness, malaise and anorexia were progressive, and the patient was unable to work. The dyspnea persisted and was aggravated by any type of exertion. The right chest pain gradually decreased in severity and disappeared completely by the end of the month.

A dull aching pain and sensation of numbness in the right shoulder appeared, August 3, 1946. This pain seemed to radiate down the right arm to the ulnar side of the hand. The patient finally decided to seek further medical advice because of this new symptom and because of his poor general health, including a weight loss of 20 to 25 pounds.

The past history, family history, and history by systems were noncontributory.

The physical examination on admission revealed a fairly well developed but rather emaciated white man displaying moderate but obvious dyspnea. His temperature was 101 degree Fahrenheit. The pulse was 120 per minute. Respirations were counted at 24 per minute. The blood pressure, 110 systolic and 70 diastolic in millimeters of mercury. The general physical examination was essentially negative except for the chest which showed almost complete lack of respiratory excursion on the right. There was percussion dullness with total absence of fremitus and breath sounds on the right side below the level of the third rib anteriorly. The heart was normal in size to percussion, and no murmurs or irregularities of rhythm were detected.

Admission laboratory tests showed a hemoglobin of 8.6 Gm. and erythrocyte count of 3,260,000 for each cubic millimeter of blood with hyperchromasia, anisocytosis, and poikilocytosis on smear. The leukocyte count was 8,400 with 76 per cent polymorphonuclears, 23 per cent lymphocytes, and 1 per cent monocytes. The sedimentation rate was 115 millimeters in one hour. Urinalysis, blood serology, and sputum studies for acid-fast

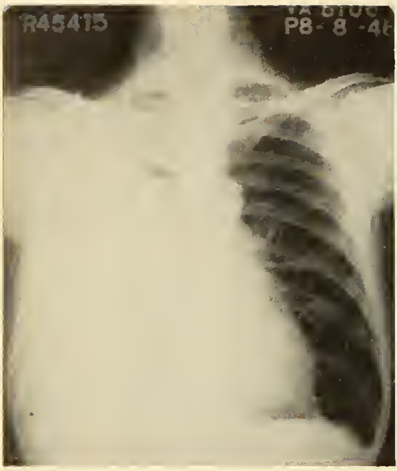

Fig. 1. Chest x-ray examination on admission shows massive right hemothorax.

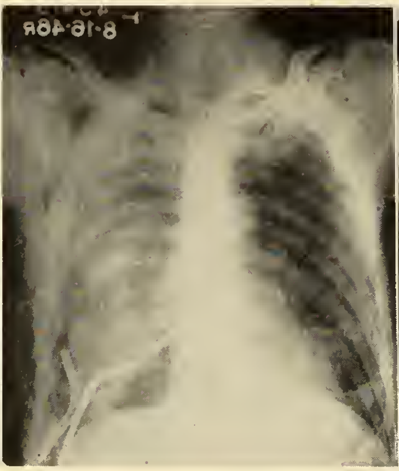

Fig. 2. Chest x-ray examination immediately postoperative shows 75 per cent re-expansion of the right lung.

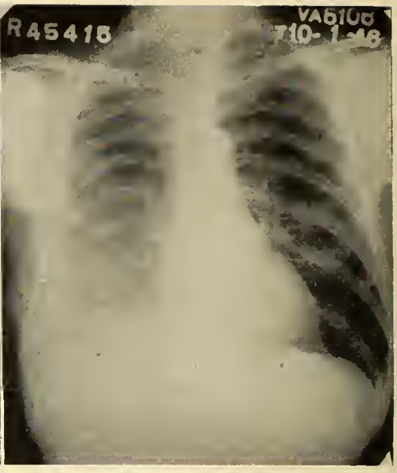

Fig. 3. Chest x-ray examination at the time of postoperative follow-up shows some residual thickened pleura in the right lower thoracic cavity.

bacilli were negative. Blood chemistry studies were all normal.

X-ray examination on admission (Fig. 1) demonstrated fluid obscuring the entire right half of the thorax except for a narrow triangular strip of air-containing lung ascending from the right hilum to the apex.

The diagnosis on admission was "pleural effusion, right thorax, etiology undetermined," and the patient was accepted on the medical service for detailed study and treatment.

A thoracentesis of the right chest was performed August 8, 1946, and 500 cubic centimeters of syrupy dark red fluid were aspirated. X-ray examination immediately thereafter showed no significant change other than the appearance of bubbles of air overlying multiple fluid levels. The roentgenologist's diagnosis was multilocular, encapsulated empyema. Laboratory examination of the aspirated fluid showed a protein of 3.7 grams for each 100 cubic centimeters, a leukocyte count of 18,000 for each cubic millimeter of fluid, and an erythrocyte count of 500,000 for each cubic millimeter. No tumor cells or acid-fast bacilli were found. Culture of the fluid was positive for hemolytic staphylococcus aureus.

General supportive medical management was carried out, and the patient was given two blood transfusions of 500 cubic centimeters each. He improved somewhat clinically but continued to follow a febrile course with a daily fever of 100° to 101° F. in spite of the administration of 40,000 units of penicillin parenterally every four hours. On August 13, 1946, a second thoracentesis was performed and 350 cubic centimeters of fluid identical with that of the first aspiration were removed. Re-examination of the blood on August 14 showed that the hemoglobin had risen to 14.6 Gm. and the erythrocyte count to 4,250,000.

August 15, 1946, the patient was seen by the surgical service in consultation. The diagnosis of an infected organized hemothorax seemed likely but a primary malignancy of the pleura could not be excluded because of the patient's age, the insignificant history of trauma, and the lag between apparent trauma and the onset of symptoms. It was felt that in either case an exploration of the right chest was indicated.

Operative Procedure.—On August 16, 1946, the right thorax was opened after wide subperiosteal costectomy of the seventh rib under intratracheal cyclopropane anesthesia. About 2,000 cubic centimeters of syrupy brown fluid containing many large soft fragments of fibrin were removed and the typical firm, smooth peel of an organized hemothorax was revealed. Superiorly slight transmission of the respiratory movements from the constricted atelectatic lung could be felt. Palpation inferiorly showed a diaphragm completely immobilized by the fibrous peel. No evidence of neoplasm was detected.

That portion of the peel in contact with the lung superiorly was then removed by careful blunt dissection. A similar removal of the peel from the diaphragm resulted in immediate resumption of normal respiratory excursions. The lung was freed from minor adhesions of the upper mediastinum and then was expanded to normal size by positive pressure applied through the intratracheal tube. Fenestrated catheters were placed in the lower portions of the thoracic cavity anteriorly and posteriorly through trocar punctures and the operative incision was closed tightly in layers without drainage using fine interrupted silk sutures. 100,000 units of penicillin in 400 cubic centimeters of saline were instilled through the posterior catheter and, after maximum expansion of the lung had been assured, both catheters were clamped. The tracheo-bronchial tree was aspirated per bronchoscope and the patient was returned to his room where a constant negative pressure of 12 to 14 centimeters of water was applied immediately to the anterior catheter by means of a Stedman pump setup. The patient remained in the Trendelenburg position until his blood pressure was stable and he had fully recovered from anesthesia. He was then placed in semi-Fowler's position. After a period of six hours, in which to allow residual penicillin to be effective, the posterior catheter was unclamped and likewise attached to the suction apparatus. Chest radiograph taken directly after surgery showed that the right lung had been re-expanded to about 75 per cent of normal (Fig. 2).

Postoperatively, particular attention was directed toward the maintenance of uninterrupted negative pressure within the affected side of the thorax. Twenty cubic centimeters of 250 units for each cubic centimeter of penicillin were injected by needle through the wall of each catheter every four hours to keep them clear. Fluid balance was maintained carefully and protein intake augmented by 45 grams of amino acids intravenously for each day. Forty thousand units of penicillin were administered parenterally every three hours, and pain was controlled by the administration of 50 to 75 milligram doses of demerol.

Examination of the fragments of peel removed at operation showed them to be firm and fibrous with an average thickness of 5 mm. Microscopically (Fig. 4), the surface toward the center of the hematoma was made up of many young fibroblasts and newly developing capillaries. The surface toward the pleura was densely fibrous and resembled scar tissue. The intermediate area showed gradual transition between these extremes.

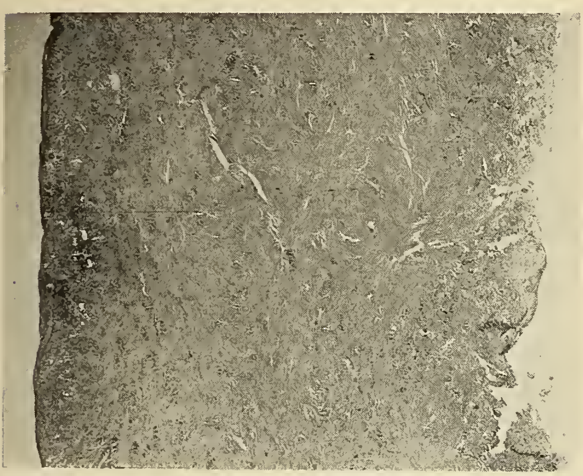

Fig. 4. Microphotograph of the peel removed at operation. On the right is the mature fibrotic peripheral portion. On the left is the immature organizing central portion showing active fibroplasia and abundant newly developing capillaries.

On the third postoperative day the anterior catheter was removed, and the patient was allowed to sit on the side of his bed the following morning. On the fifth day the posterior catheter was removed, and the patient was allowed up in a wheel chair. Convalescence was steady, and by the ninth postoperative day he was fully ambulatory and afebrile.

On August 27, 1946, the eleventh postoperative day, a fever of 100.6° developed, and examination revealed a phlebothrombosis of the lower extremities extending up to the popliteal spaces bilaterally. Anticoagulant therapy consisting of oral dicumerol and continuous intravenous heparin was started at once. The blood prothrombin concentration decreased enough in forty-eight hours to permit discontinuance of heparin. Administration of oral dicumerol was continued for a total of 10 days. The remaining convalescence was uneventful and the patient was discharged from the hospital, September 10, 1946.

On November 1, 1946, the patient returned to the surgical outpatient section for postoperative checkup. Physical examination at that time revealed nothing abnormal except minimal tenderness in the operative scar. The patient had gained about 14 pounds in weight and felt very well. X-ray examination of the chest revealed some residual thickened pleura at the right base but was otherwise normal (Fig. 3).

Summary

The pathogenesis of organized hemothorax is discussed briefly. The case of a patient with an infected organized hemothorax who became symptomatic two weeks after apparent insignificant chest trauma is reported. The technique of the decortication operation and the postoperative management of the reported case are presented in some detail.

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Discussion

Dr. John R. Paine: Doctor Harper's case is the first one of the kind which has come to my attention in civil practice. It is still difficult for me to believe that the trauma this man says he suffered caused the hemorrhage in his chest, but we have been able to find no other cause. Those who have had no experience in decortication of the lung have missed some of the pleasures of surgery. There are certain things that give us pleasure. A surgeon derives real satisfaction, after going into the chest, scooping out cups of blood and not being able to find the lung, in taking the peel off and seeing the lung expand under his hand so that when he has finished the lung fills the chest cavity completely.

We had a striking experience during the war treating organized hemothorax. The American way of treatment in most of these cases was as Doctor Harper has indicated. The British never did become convinced of the merits of this operation. They stuck to the conservative idea of repeated aspirations. That isn't entirely true but the general British plan was not to do so radical an operation. They preferred to aspirate a few ounces of fluid this week and then next week take a few more ounces. In the majority of cases treated this way, the patient regained a large percentage of his vital capacity, but I do not believe the recovery was as complete as when the patient is operated on and the peel removed. I am sure the time of recovery is much shorter when the patient is treated by the method described by Doctor Harper.

CRITERIA FOR CHOLEDOCHOSTOMY TUBE REMOVAL

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The general policy of surgeons in this area has been to insert some type of choledochostomy tube whenever the common bile duct has been opened during a surgical procedure. It is important, therefore, to establish definite critieria for determination of the optimal time for removal of such a tube.

At the Minneapolis Veterans hospital we employ the three criteria which have been suggested previously by Bergh.[3]

> (1) cholangiographic evidence that the biliary tree is structurally normal, that no filling defects suggestive of stone are present, and that the contrast medium empties readily into the duodenum; (2) direct evidence that the sphinc-

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ter resistance is normal and that the sphincter is not irritable; (3) subjective comfort of the patient, and lack of drainage around the tube when the catheter is clamped.

Before a choledochostomy tube may be removed it is essential that the patient be comfortable during periods when the tube is clamped. However, this simple clinical test in itself is not sufficient, for it is well known that stones may be present in the duct without obstructing bile flow and without producing symptoms. Likewise, we have demonstrated that the patient with an irritable sphincter of Oddi may, at times, tolerate closure of the choledochostomy tube without discomfort.

Cholangiograms are made in all cases in which a patient has a tube draining the common bile duct. A satisfactory cholangiogram is best obtained by the use of a nontoxic contrast medium having a watery consistency, miscible with bile. The hepatic ducts and the common duct should be filled, and the ease with which the contrast medium enters the duodenum should be observed. Cholangiograms are most important in the recognition of calculi or other duct obstructions, but also may reveal the presence of hepatic abscesses, and possibly spasm of the sphincter of Oddi, or stricture of the duct due to inflammatory reaction. In this connection, Royer[15] states that he is able to distinguish spasm from stricture on the basis that spasm gives eccentric narrowing of the duct shadow, while concentric narrowing is a finding in true stricture. Important as cholangiography is, it still leaves information to be desired concerning the condition of the sphincter of Oddi, whether it is in spasm, whether it is irritable and may be stimulated to contract in abnormal spasm, or whether it has normal tone. In order to evaluate this with any degree of accuracy it is necessary to conduct direct tests of the resistance of the sphincter of Oddi.

Although the technique of this test is simple, it is not yet in general use, and may therefore be described briefly. The apparatus required consists of an infusion flask connected to the open end of the choledochostomy tube by rubber tubing, incorporating a Murphy drip bulb in the system so that flow may be observed. The apparatus is sterilized, filled with saline solution, and air is evacuated from the system, save for the small air gap in the Murphy drip bulb. The flask is suspended from a standard, and arranged so that it may be elevated and lowered at will, thereby varying the pressure of the column of fluid in the system. Readings are taken directly on a centimeter scale suspended from the standard, and adjusted so that the zero point is placed at the estimated level of the common bile duct.

In carrying out the test, the infusion flask is elevated, then lowered to the point at which saline solution fails to run through the tubing. When this point is reached, the column of solution is supported without any flow in either direction, and the drop suspended in the Murphy bulb moves with the respiration of the patient. Elevation of the flask above this point allows saline solution to flow into the biliary tract, as evidenced by dripping solution through the Murphy drip bulb, and lowering the flask beyond this point causes reflux of fluid back into the infusion system. The level at which the column of saline solution is suspended without flow in either direction is taken as a measurement of the sphincter resistance. That this test is fairly delicate, in spite of the simplicity of the apparatus, is demonstrated by the marked changes produced by induced spasm, as when morphine is administered, or the flask suddenly elevated. Whenever practicable, the test is performed in the morning, after withholding breakfast, or at other times of the day, after a fasting period of four to eight hours, since it has been shown that ingestion of food lowers sphincter resistance—fatty foods having a marked effect, with less response to protein, and no effect after ingestion of carbohydrate.[4] The patient should not have received opiates prior to the test, since morphine, codein and related drugs produced spasm of the sphincter.[3]

By this technique, the resistance offered by the sphincter of Oddi has a normal range of 9 to 23 centimeters of water, with the ideal normal being 13 to 15 centimeters. Spasm of the sphincter may produce readings indicating a resistance of 30 to 40 centimeters of water, or more, and in these patients the resistance readings are usually more fluctuant than in normals. Irritability of the sphincter thus demonstrated is probably more commonly associated with organic pathologic condition such as an inflammatory process, or irritation caused by stone; but purely functional derangement (biliary dyskinesia or biliary dyssenergia) may also produce spasm.

From this, it is seen that by sphincter resistance tests we are able to tell, with a fair degree of accuracy, the condition of the sphincter of Oddi, in so far as tone and spasm are concerned, but this test gives no information as to the presence of stone or growth not causing obstruction, unless there be an associated irritability of the sphincter, as is often the case.

It has been the practice at the Minneapolis Veterans Hospital to judge the time for removal of the choledochostomy tube on the basis of these three criteria. If the patient tolerates clamping of the tube for twelve hours without discomfort, if the cholangiogram is normal, and if the sphincter is not irritable and the resistance is normal, the tube may be removed. In the usual uncomplicated case the cholangiogram may be done on the seventh to ninth day postoperatively, and the sphincter resistance test may be done the following day. The choledochostomy tube may, thefefore, be removed in eight to ten days in the event of a normal response.

In the presence of an irritable sphincter, however, the choledochostomy tube should be left in place for longer periods of time. Prolonged decompression of the ducts by means of external drainage permits the sphincter to return gradually to normal. We have seen a number of cases in which this has occurred. The time required for the return of the sphincter to normal may be from several weeks to several months. However, if the still irritable, the patient is very likely to suffer recurrence of pain which may resemble biliary colic, or we have seen no patient in whom the criteria for re- may be a vague epigastric distress. In contrast to this, choledochostomy tube is removed while the sphincter is moval of choledochostomy tubes have been satisfied who has had postcholecystectomy pain.

We may conclude, therefore, that we have available three valuable criteria for judging the time when a choledochostomy tube may be removed, each of these having its own particular advantages and limitations. In recapitulation, clamping the tube is a clinical test of limited value, which gives little information as to the structural or physiological status of the duct system. Cholangiograms give a picture of the anatomical condition of the biliary ducts, but give little information concerning the condition of the sphincter. Since this condition of the sphincter is such an important consideration, direct measurement of the resistance of the sphincter of Oddi should be carried out. No single test furnishes sufficient information concerning the postoperative morphology and physiology of the biliary duct system, but by employing all three criteria we are able to gain valuable knowledge as to the condition of the ducts, the presence or absence of stones, the condition of the sphincter, and the tolerance of the patient to the existing conditions. The optimal time for removal of a choledochostomy tube may, therefore, be determined accurately by the use of these criteria.

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Discussion

Dr. George Bergh: There is little to add to what Doctor Utendorfer has said. He has covered the subject very well from our point of view. The criteria have been of real value to us, and we employ them routinely.

Dr. J. M. Hayes: I am wondering whether there are any statistics as to what was the average time for removing the tube.

Dr. R. W. Utendorfer: In the normal case, from eight to ten days.

Dr. Carl Rice: I would like to ask Doctor Utendorfer and Doctor Bergh whether there are medications which will relieve the spasm of the sphincter? I notice morphine did not.

Dr. R. W. Utendorfer: The only drugs that have been found to be very effective on the sphincter are amyl nitrite and, to a lesser extent, nitroglycerine. There are some cases in which spasm of the sphincter is not relieved by amyl nitrite. Atropine and some of the usual spasmolytic agents have no effect. We are testing some of the newer ones at present, but cannot tell about them yet.

MASSIVE GASTRIC HEMORRHAGE DUE TO HEMORRHAGIC GASTRITIS NECESSITATING GASTRIC RESECTION

Case Report

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Surgical arrest of massive gastrointestinal hemorrhage continues to offer problems of major importance. This is particularly true when the vomiting of blood or the passage of large, bloody, loose and frequent stools occurs in a patient who presents practically no other symptoms or findings. Consideration of possible causes of the bleeding then becomes a matter of considerable concern.

Reports from most of the larger clinics indicate that ulcers of the stomach or duodenum are responsible for 90 per cent of upper gastrointestinal tract hemorrhages. The next most common cause, bleeding from esophageal varices, secondary to cirrhosis of the liver, has a reported incidence of from 2 to 5 per cent. Other less frequent causes of hematemesis and melena include carcinoma of the stomach or duodenum, benign tumors of the stomach, injuries to the stomach, blood dyscrasias, and ulceration in a Meckel's diverticulum.

Another possible source of massive bleeding from the upper gastro-intestinal tract, and one which has received little emphasis, is hemorrhagic gastritis. Bockus reports that in about one-fourth of the cases of massive hemorrhage into the upper gastrointestinal tract, roentgen study performed after the emergency is over fails to reveal an ulcer or other gastroduodenal lesion. Meyer and Steigmann[2] state that negative x-ray findings are reported in from 30 to 50 per cent of patients who have had gastric hemorrhage. Pathologists not infrequently have been unable to demonstrate at autopsy the source of bleeding in patients who have seemingly died of massive upper gastrointestinal hemorrhage. It should be recalled that post-mortem antolysis of the mucous membrane of the stomach occurs soon after death.

Examination of the stomach with the gastroscope has enabled visualization of areas of gastritis from which oozing of blood occurs and actual superficial ulcerations have been noted. It is not at all unlikely that a high percentage of the 25 to 50 per cent of patients who have negative x-ray findings after hemorrhage has subsided bleed from such lesions. As yet, the frequency of gastritis as a cause of massive upper gastrointestinal hemorrhage has not been determined. That it can occur and that it can cause massive bleeding has been emphasized to the staff at the Minneapolis Veterans hospital by experience with the following case.

Case History

The patient, a thirty-two-year-old veteran of World War II, was admitted to the medical service of the hospital on September 15, 1946. His presenting com-

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†Surgical resident, Minneapolis Veterans Hospital.

plaints were severe weakness and dizziness following the passage of large black liquid stools beginning three days prior to admission.

The patient's army career began in March, 1944, when he was assigned to the infantry. He had had no complaints referable to the gastrointestinal system until January, 1945, when he noticed a bloody stool. There were no other symptoms at that time. He was hospitalized in an army general hospital, where he apparently was studied thoroughly. A barium x-ray examination of the stomach was made, stools were examined, and he was put on various diets. After having been hospitalized for about a month, he was discharged to duty, but transferred from the infantry to the air corps, where he assumed the duties of a truck mechanic. He was told only that he had a "nervous stomach." He experienced no further appreciable difficulty during his remaining army service. The patient stated that he drank only very moderately and smoked about one package of cigarettes a day.

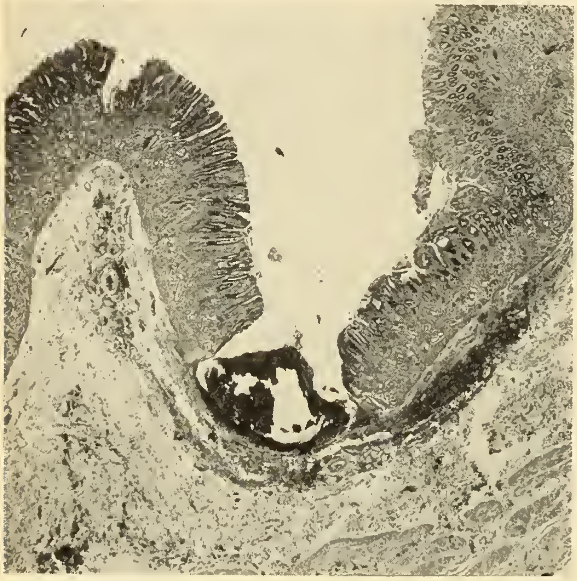

Fig. 1. Section taken through the linear lesion in the mucosa.

About one month prior to admission, he began to experience a dull aching distress, which he described as "bloating." This would begin in both flanks and gradually extend into the epigastrium, where it would remain. This distress usually occurred about one-half hour after meals and would be relieved somewhat by belching or by the ingestion of alkalis.

On the evening of September 12, three days prior to admission, he had a large bowel movement, consisting entirely of black liquid. Following this, he experienced severe cramping pains in the lower abdomen, which were relieved by two additional passages of black liquid. He became weak and experienced dizziness on walking or standing. On the following day, he continued to feel weak and dizzy. No nausea nor vomiting was experienced, however, and he was able to eat normally. The next day, defecation again produced a black liquid stool, and on September 15, another black liquid stool was passed. His family physician then was called and that same day he was sent to the hospital, where he was admitted with a tentative diagnosis of bleeding peptic ulcer.

Examination on admission revealed an unusually tall, slender, red-haired male. Although he was 6 feet 6 inches tall, the patient weighed only 140 pounds. There was noted a generalized, moderately severe pallor of the skin and mucous membranes. He appeared to be nervous and apprehensive. The temperature on admission was 99.2 Fahrenheit, the pulse rate 120 per minute and the blood pressure was 112 systolic and 60 diastolic in millimeters of mercury. The heart and lungs were normal to percussion and auscultation. The abdomen was flat and soft. No masses were palpated and no tenderness found. The liver and spleen were not enlarged. No other physical abnormalities were noted.

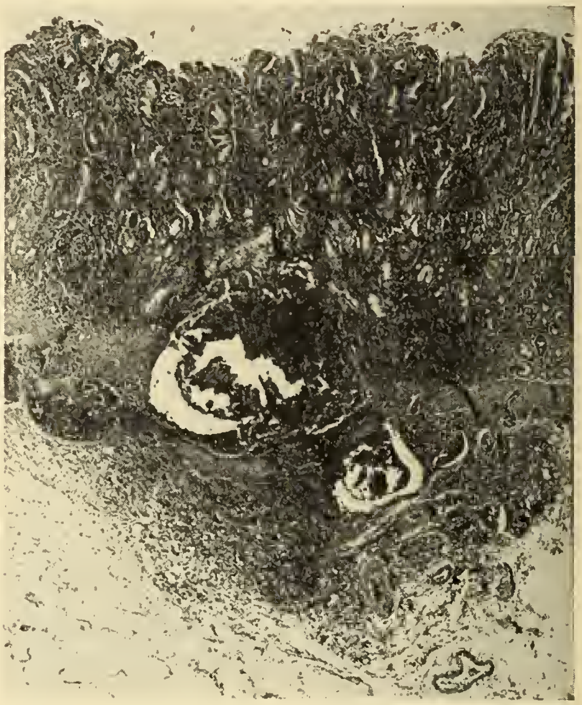

Fig. 2. Section through one of the smaller hemorrhagic areas. Note the large number of erythrocytes in the region of the muscularis mucosae, with break-through into the mucous membrane.

The hemoglobin on admission was 4.9 grams (31 per cent) and the red blood cell count was 1.6 million. The white blood cell count ranged from 6,000 to 11,000 and differential counts were within normal limits. The bleeding time was two and one-half minutes, the clotting time was six minutes, and the prothrombin time was thirteen seconds as compared with a normal control of thirteen seconds. Study of the blood morphology revealed findings consistent with a secondary anemia. Urinalyses showed no albumin, sugar, nor abnormal sediment, and specific gravities ranged from 1.009 to 1.024. Stool examinations consistently showed a four plus guaiac test for occult blood.

On admission to the medical service, the patient was placed on a regimen of strict bed rest and was given morphine. A nasal tube was introduced into the stomach and he was given a continuous drip of high caloric, high protein liquid diet night and day. Amphogel, ascorbic acid and vitamin K were added. Atropine sulphate, grains 1/100, was given every six hours. Daily transfusions of 500 cubic centimeters whole citrated blood were administrated by slow intravenous drip. After three days of this treatment, the patient felt much improved, the hemoglobin had risen to 9.7 grams (62 per cent) and the red blood cell count to 3.1 million. Nasal tube feedings were discontinued and hourly feedings of milk and cream alternating with amphogel were substituted. The first bowel movement during hospitalization occurred two days after admission, however, and was definitely tarry.

Five days after admission, the patient suddenly became faint and vomited 900 cubic centimeters of bright red blood. 1,000 cubic centimeters of whole blood were given during the night, and the hemoglobin and red blood cell count the following morning remained at about the previous level. The hematocrit was 29 per cent. The blood pressure, which was checked hourly, remained at around 110 systolic and 70 diastolic, and the pulse at about 100 per minute. Surgical consultation was requested the following morning. Because the patient had not been in true shock and because the source of bleeding had not been determined, the decision was made to continue medical management in the hope that bleeding would subside so that a barium study of the upper gastrointestinal tract might enable localization of the bleeding area. Gastroscopy was considered, but deemed unwise. It was thought, however, that if further massive hemorrhage should occur, immediate surgical intervention should be undertaken.

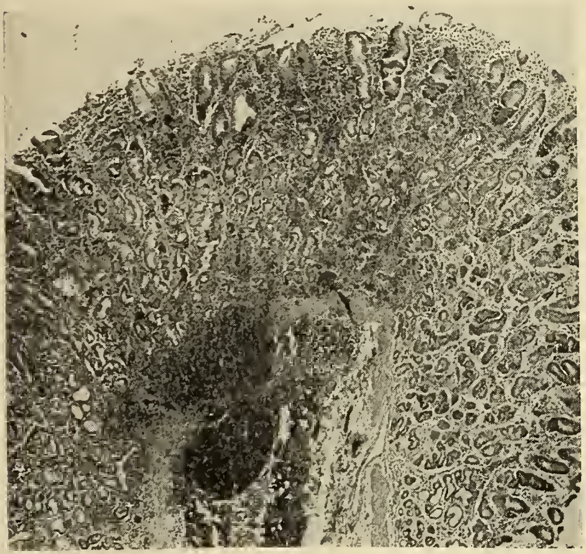

Fig. 3. Another section through a small hemorrhagic area. Erythrocytes have not broken through to any great extent.

The previously outlined medical management was continued. One definitely tarry stool was obtained by enema, but additional stools were reported to be lighter in color. Ten days following the episode of hematemesis, the medical resident was called at 3:30 a.m. because the blood pressure had dropped to 86 systolic and 55 diastolic. One unit of plasma followed by 500 cubic centimeters of whole blood restored the pressure to normal. It was found, however, that the hemoglobin had dropped to 6.7 grams (43 per cent) and the red blood cell count to 2 million for each cubic millimeter of blood in spite of the transfusion. Since hemorrhage appeared to be continuing despite eighteen days of active medical management, preparation for surgery was deemed advisable. Because it was feared that barium x-ray study or gastroscopy might cause further bleeding and because probabilities were in favor of a bleeding gastric, or duodenal ulcer, these diagnostic aids seemed contraindicated. The patient was given sufficient blood to raise the hemoglobin to 15.4 grams (98 per cent) and the red blood cell count to 4.5 million by continuous slow drip and laparotomy was performed nineteen days after admission. He had received a total of 7,500 c.c. of whole blood prior to operation.

Under intratracheal cyclopropane plus curare anesthesia, a left subcostal incision was made and the abdomen explored. The stomach was unusually large and elongated, and the stomach wall was edematous, but the serosal surfaces presented no evidence of scarring. The first portion of the duodenum was distended, but there was no deformity or scarring anteriorly and no adherence to the pancreas posteriorly. The small bowel was examined from the ligament of Treitz down to the terminal ileum. No abnormalities were noted except that black liquid, presumed to be blood, could be seen through the serosa beginning high in the jejunum. The colon also contained a large quantity of soft black material. Since no other cause for the hematemesis and melena could be established, it was decided that a small peptic ulcer was the most likely cause and that gastric resection should be done. The pyloric portion of the stomach and about four centimeters of the duodenum distal to the pylorus were first devascularized and the duodenum opened. The mucous membrane appeared to be normal and careful inspection failed to reveal the prescence of a bleeding point. The duodenum then was inverted with a running layer of chromic catgut re-inforced by a second layer of interrupted 0000 silk sutures. The inverted duodenal stump was buried into the capsule of the pancreas.

The greater curvature was devascularized up to and including the lower two vasa brevia and the lesser curvature to the left gastric artery. About 75 per cent of the stomach was removed and a Hofmeister type of short-loop, retrocolic gastro-jejunostomy performed, using the Wangensteen aseptic technique.

Upon opening the resected stomach, the pathologist found no ulcer present. The mucosa of the stomach was thrown into normal appearing rugae except in the pyloric antrum, where it was smoother. On the posterior wall of the fundal portion of the stomach, there was noted a linear defect in the mucosa measuring 2 centimeters in length and up to 3 millimeters in diameter. The defect was shallow, dark red, and presented irregular borders. In addition, other sections showed occasional tiny hemorrhagic foci within or just beneath the mucosa.

Some doubt remained as to the source of the hemorrhage, however, until miscroscopic studies were made. Sections through the linear lesion in the mucosa showed complete dissolution in continuity of the mucous membrane extending into the muscularis mucosa and possibly into the deeper muscle layers. There was a dense infiltration of extravasated blood. Sections through the smaller hemorrhagic areas revealed massive aggregations of erythrocytes, most densely collected in the muscularis mucosa. In some instances, there seemed to be actual necrosis of this muscular layer. There was definite edema between the muscular layers and in the connective tissues. Furthermore, inflammatory cellular exudate, and mild scatterings of eosinophiles, polymorphonuclear cells and lymphocytes, was noted in the vicinity of the lesions. The diagnosis of the pathologist was subacute diffuse gastritis with focal mucosal and submucosal hemorrhages.

The postoperative course was without complication. No further melena or hematemesis occurred, and no more blood transfusions were necessary. Gastric analysis postoperatively proved the patient to be achlorhydric to histamine. Barium radiographic examination revealed no abnormality of the esophagus or residual pouch, and barium passed readily into the small bowel. The patient was seen subsequently one month after surgery. There had been no recurrence of his previous symptoms. He stated at that time that he had been feeling fine, had been eating well, and had gained about 10 pounds in weight.

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2. Meyer, K. A. and Steigmann, F.: Gastric hemorrhage: Implications as to treatment. S. Clin. N. A., 24:30, (Feb.) 1944.

(Continued on Page 339)

Reports and Announcements

MEDICAL BROADCAST FOR MARCH

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Service Association in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association, and the University of Minnesota School of the Air.

1	11:30 A.M.	KUOM-KROC-KFAM-	Medicine in the News
4	9:00 A.M.	WCCO	The Code of Medical Ethics
5	11:00 A.M.	KUOM	We Inherit Some Traits But We Acquire Others
7	9:00 A.M.	WCCO	Pneumonia
8	11:30 A.M.	KUOM-KROC-KFAM-	Medicine in the News
11	9:00 A.M.	WCCO	Industrial Nursing
12	11:00 A.M.	KUOM	Stimulants and Narcotics Can Be Very Harmful
13	9:00 A.M.	WCCO	Influenza
15	11:30 A.M.	KUOM-KROC-KFAM-	Medicine in the News
18	9:00 A.M.	WCCO	Rural Health and Nursing
19	11:00 A.M.	KUOM	Self-Prescribed Medicine Can Be Most Injurious
20	9:00 A.M.	WCCO	Speech Disorders in Childhood
22	11:30 A.M.	KUOM-KROC-KFAM-	Medicine in the News
25	9:00 A.M.	WCCO	Conservation of Vision
26	11:00 A.M.	KUOM	Your Mental Outlook Can Help or Hinder
27	9:00 A.M.	WCCO	Mouth Infections
29	11:30 A.M.	KUOM-KROC-KFAM-	Medicine in the News

PRIZE CONTEST ANNOUNCED

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons announces a Foundation prize contest.

Further information may be obtained from Dr. James R. Bloss, secretary, 418 Eleventh Street, Huntington 1, West Virginia.

E. STARR JUDD LECTURE

The fourteenth E. Starr Judd lecture will be given by Dr. I. S. Ravdin, John Rhea Barton Professor of Surgery at the University of Pennsylvania, Tuesday evening, April 15, 1947, at 8:15 in the Auditorium of the Museum of Natural History. Doctor Ravdin's subject is "Changing Concepts in Surgical Care."

The late E. Starr Judd, an alumnus of the Medical School of the University of Minnesota, established this annual lectureship in surgery a few years before his death.

AMERICAN COLLEGE OF CHEST PHYSICIANS

The thirteenth annual meeting of the American College of Chest Physicians is scheduled to be held at the Ambassador Hotel, Atlantic City, New Jersey, June 5 to 8. An interesting scientific program has been planned for this meeting. Prominent speakers from other countries will present papers.

The oral and written examinations for Fellowship will be held on the first day of the meeting, June 5. Applicants for Fellowship in the College who plan to take these examinations should communicate *at once* with the Executive Secretary, American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

The convocation for new Fellows and Life Members of the College will be held on Sunday, June 8. At this time certificates will be awarded to Fellows and Life Members admitted since June, 1946.

AMERICAN SOCIETY FOR THE STUDY OF STERILITY

The third annual convention of the American Society for the Study of Sterility will be held at the Hotel Strand, Atlantic City, New Jersey, on June 7 and 8, 1947, preceding the annual AMA Convention. The general theme of the meetings will be that of attempting to disseminate to the physician treating marital infertility an over-all picture of the latest advances in reproduction. The convention will include original papers, round table discussion, scientific exhibits, and personal demonstrations. Registration for the sessions is open to members of the medical and allied professions.

Additional information may be obtained from the secretary, Dr. John O. Haman, 490 Post Street, San Francisco 2, California.

INDUSTRIAL HEALTH MEETINGS

A conclave of combined professional personnel in industrial health work over the entire nation will take place at the Hotel Statler, Buffalo, N. Y., April 26 through May 4, 1947.

These meetings will represent the 32nd annual gathering of the American Association of Industrial Physicians and Surgeons; the ninth annual conference of the American Conference of Governmental Industrial Hygienists; the eighth annual meeting of the American Industrial Hygiene Association; the fifth annual conference of the American Association of Industrial Nurses, and the fourth annual meeting of the American Association of Industrial Dentists.

The sessions will be replete with many new subjects of interest, including among others, round table discussions for chemists, engineers, physicians and nurses; a symposium on new problems in the developments of industrial hygiene; a discussion of state codes and industrial hygiene administration; conferences on environmental control, on particle size, and analytical procedures; clinics on fractures and traumatic surgery, including a symposium on back problems; hazards incident to the use of the atomic bomb; reports on the Bikini experiments with motion pictures; tracer chemistry in toxicological research and experience with range finding tests; progress in the teaching of industrial medicine in Amer-

(Continued on Page 322)

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INDUSTRIAL HEALTH MEETINGS

(Continued from Page 320)

ican medical schools; the development and administration of industrial dental clinics in various industrial groups; a panel discussion on new preventive measures in industry; a panel discussion on in-service education of the nurse in industry, and many other subjects which can be found by consulting the preliminary program.

Further details and copy of the preliminary program may be secured by writing to Dr. Edward C. Holmblad, Managing Director of the American Association of Industrial Physicians and Surgeons, 28 East Jackson Blvd., Chicago 4, Illinois.

All hotel reservations are made by the Housing Bureau, Buffalo Convention and Tourist Bureau, Inc., 602 Genesee Bldg., Buffalo, N. Y.

DAKOTA COUNTY SOCIETY

All officers of the Dakota County Medical Society were re-elected for 1947 at the annual meeting on January 28 at the Gardner Hotel in Hastings. Dr. Albert J. Emond, Farmington, was retained as president; Dr J. A. Sanford, Farmington, vice president, and Dr. L. R. Peck, Hastings, secretary-treasurer.

The society elected a cancer committee to co-operate with the state and national cancer organizations, naming Dr. A. J. Emond as chairman, and Drs. Leo Burns, South Saint Paul, and L. R. Peck as committee members.

HENNEPIN COUNTY SOCIETY

At a meeting on February 3, it was announced that Dr. Ralph H. Creighton, Minneapolis, had been elected president of the Hennepin County Medical Society. He will take office in October.

Dr. Robert L. Wilder and Dr. William P. Sadler were named vice presidents; Dr. Charles A. Aling, secretary-treasurer, and Dr. Thomas Lowry, librarian. Members elected to various boards are: Drs. Willard D. White and John H. Moe, board of directors; Drs. Edwin G. Benjamin and Otto W. Yoerg, board of censors; Drs. S. Marx White and Vernon L. Hart, board of ethics; and Drs. Henry L. Ulrich and James K. Anderson, board of trustees, Drs. Kenneth Bulkley, O. J. Campbell, Richard H. Crammer and Donald McCarthy were elected delegates to the State Medical Association.

The program for the meeting featured a talk by Dr. Donald W. Hastings, head of the University of Minnesota psychiatry and neurology department, who spoke on "Psychotherapy in General Practice."

McLEOD COUNTY SOCIETY

At the annual meeting of the McLeod County Medical Society, held January 9 at Glencoe, Dr. C. W. Truesdale, Glencoe, was elected president, and Dr. John W. Gridley, Glencoe, secretary. A resolution was passed endorsing the national drive for the infantile paralysis fund.

MINNESOTA SURGICAL SOCIETY

Dr. C. W. Mayo, Rochester, was elected president of the Minnesota Surgical Society at the organization's first postwar meeting, held in Rochester on January 31. The society last met in 1941, when it was decided to discontinue meetings for the duration of the war.

Also elected to office at the January meeting were Dr. O. J. Campbell, Minneapolis, vice president, and Dr. Malcolm G. Gillespie, Duluth, secretary-treasurer.

During the morning session of the one-day meeting, the group was addressed by Drs. M. B. Dockerty and B. T. Horton, Rochester. At the afternoon session, papers were presented by Drs. F. R. Keating, J. H. Grindlay, J. C. Cain, Hiram E. Essex, H. Waltman Walters, S. W. Harrington and F. Z. Havens, all of Rochester.

A dinner was given at the Mayo Foundation House for the society in the evening.

STEARNS-BENTON COUNTY SOCIETY

Dr. Gilman H. Goehrs, St. Cloud, was elected president of the Stearns-Benton County Medical Society at a meeting held in St. Cloud on January 23. Dr. A. H. Zachman, Melrose, was named president-elect for 1948 and also a delegate for 1947.

Others elected to office were Dr. F. H. Baumgartner, Albany, vice president; Dr. John N. Libert, St. Cloud, secretary-treasurer; Dr. R. N. Jones, St. Cloud, alternate delegate, and Dr. S. J. Raetz, St. Cloud, advisory committee chairman.

Dr. Rodney Sturley, Saint Paul, was principal speaker at the meeting, discussing the use of hormones.

The society voted to sponsor the annual essay contest for junior and senior high school students on the subject, "Why Private Practice of Medicine Furnishes This Country with the Finest in Medical Care."

WASECA COUNTY SOCIETY

Re-elected as president, Dr. George H. Olds, New Richland, was chosen to head the Waseca County Medical Society for another term, at the annual meeting held at Hotel Waseca on January 7. Dr. H. M. McIntire, Waseca, was elected vice president, and Dr. S. C. G. Oeljen, Waseca, secretary-treasurer.

The society and the ladies auxiliary, which held its annual meeting at the same time, were entertained at a dinner at the hotel by Dr. and Mrs. Clifford T. Wadd, Janesville.

WASHINGTON COUNTY SOCIETY

The Washington County Medical Society held its regular monthly meeting on February 11. Following a business discussion, a colored motion picture entitled "Intocostrin" was shown through the courtesy of E. R. Squibb and Sons.

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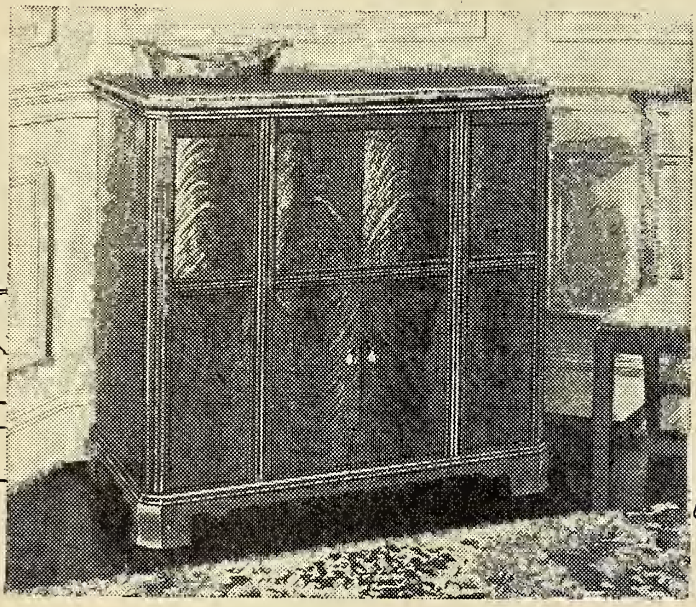

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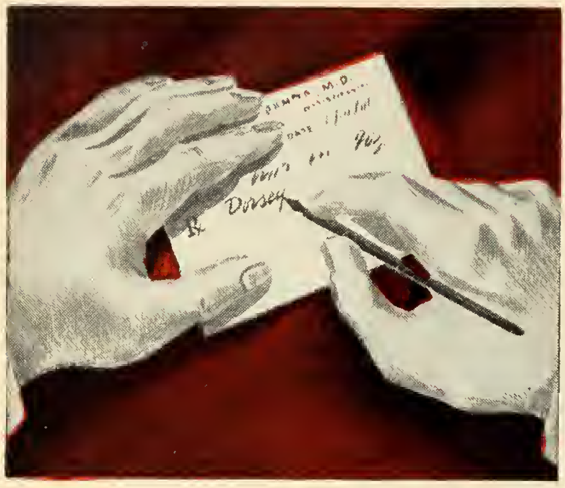

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WOMAN'S AUXILIARY

Blue Earth, Redwood-Brown and Nicollet-Le Sueur Counties

A joint dinner meeting of the medical societies and auxiliaries of Blue Earth, Redwood-Brown and Nicollet-Le Sueur Counties was held on January 20, 1947 with the Nicollet-Le Sueur group as hosts. There was a very large attendance.

Dr. Robert L. Wilder of Minneapolis addressed the group and Dr. Robert N. Barr of the Minnesota State Health Department spoke on the cancer problem and its control.

After the program the various societies and auxiliaries had their individual meetings.

Auxiliary members discussed *Hygeia,* pending legislation and the cancer essay and poster contests.

Hennepin County

The February meeting of the Hennepin County Medical Auxiliary was held February 7, 1947 at the Medical Arts Lounge, Minneapolis.

Dr. Donald W. Hastings of the department of psychiatry at the University of Minnesota talked on "Certain Types of Emotional Illness."

Mrs. John H. Moe was tea chairman for the day, and Mrs. Jalmer H. Simons served as hospitality chairman.

Ramsey County

The January Meeting of Ramsey County Medical Auxiliary was held at the home of Mrs. A. A. Kugler, 1368 Edgcumbe Road, Saint Paul.

Mr. Douglas K. Baldwin of the American Red Cross had as his topic, "Let Us Not Take It for Granted" and Richard Enquist of Saint Paul played a group of violin selections.

Tea followed the program with Mrs. Charles Waas and Mrs. E. C. Bohland pouring.

Awards were presented to two winners of essays on tuberculosis in a contest conducted as part of the Christmas Seal Program—Delores Carley of White Bear High School and Irma Artell of Mechanic Arts High School, Saint Paul.

Upper Mississippi

At a dinner meeting of the Upper Mississippi Medical Auxiliary held January 25, 1947, the following officers were elected: Mrs. A. J. Lenarz, Browerville, president; Mrs. I. L. Mitby, Aitkin, president-elect; Mrs. Virgil Quanstrom, Brainerd, vice president; Mrs. A. M. Mulligan, Brainerd, secretary, and Mrs. A. N. Borgerson, Long Prairie, treasurer.

The state cancer society and county nursing projects were discussed at this meeting. Mrs. J. A. Thabes, Sr., State president-elect, reported on the national auxiliary board meeting held recently in Chicago.

The tuberculosis essay contest, sponsored by the auxiliary was very successful. A number of state winners were residents of the Upper Mississippi territory.

The auxiliary voted contributions to the Red Cross, Christmas Seals and the State Cancer Society.

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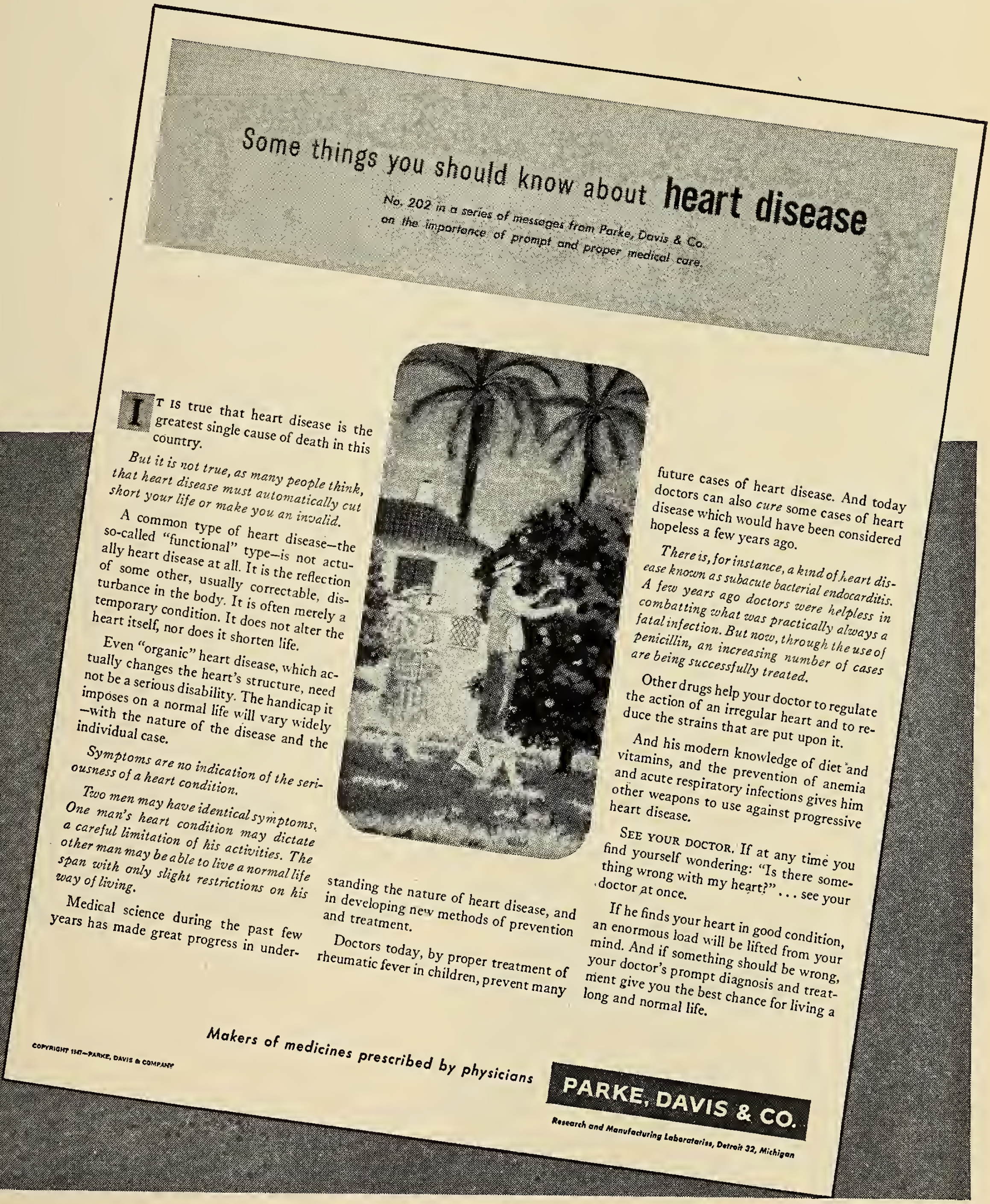

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A common type of heart disease—the so-called "functional" type—is not actually heart disease at all. It is the reflection of some other, usually correctable, disturbance in the body. It is often merely a temporary condition. It does not alter the heart itself, nor does it shorten life.

Even "organic" heart disease, which actually changes the heart's structure, need not be a serious disability. The handicap it imposes on a normal life will vary widely—with the nature of the disease and the individual case.

Symptoms are no indication of the seriousness of a heart condition.

Two men may have identical symptoms. One man's heart condition may dictate a careful limitation of his activities. The other man may be able to live a normal life span with only slight restrictions on his way of living.

Medical science during the past few years has made great progress in understanding the nature of heart disease, and in developing new methods of prevention and treatment.

Doctors today, by proper treatment of rheumatic fever in children, prevent many future cases of heart disease. And today doctors can also *cure* some cases of heart disease which would have been considered hopeless a few years ago.

There is, for instance, a kind of heart disease known as subacute bacterial endocarditis. A few years ago doctors were helpless in combatting what was practically always a fatal infection. But now, through the use of penicillin, an increasing number of cases are being successfully treated.

Other drugs help your doctor to regulate the action of an irregular heart and to reduce the strains that are put upon it.

And his modern knowledge of diet and vitamins, and the prevention of anemia and acute respiratory infections gives him other weapons to use against progressive heart disease.

See your doctor. If at any time you find yourself wondering: "Is there something wrong with my heart?" . . . see your doctor at once.

If he finds your heart in good condition, an enormous load will be lifted from your mind. And if something should be wrong, your doctor's prompt diagnosis and treatment give you the best chance for living a long and normal life.

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In Memoriam

CLARENCE MARTIN JACKSON

Dr. Clarence Martin Jackson, professor emeritus of anatomy and former head of the department at the University of Minnesota, died January 17, 1947, of Parkinson's disease after a long disabling illness. He retired from the University in 1941 before the completion of his term of service because of his disability.

Dr. Jackson was born in WhatCheer, Iowa, April 12, 1875 and was seventy-one years old at the time of his death. He received the B.S., M.S., and M.D. degrees from the University of Missouri, and in 1923 he was awarded the LL.D. degree by the University of Missouri in recognition of his services to education.

Shortly after receiving his M.D. degree, Dr. Jackson was made professor of anatomy and head of the department at the University of Missouri, and later he was appointed dean of the medical school. In 1913 he accepted the appointment as head of the Department of Anatomy at the University of Minnesota, which position he held until his retirement in 1941.

Dr. Jackson was long recognized as a leader in medical research. He was acting dean of the graduate school at Minnesota for several years while Dean Ford was on leave of absence; and in 1923-24 he was chairman of the Medical Division of the National Research Council. He was a fearless champion of research during the trying period when the Minnesota Medical School was being transformed from an ordinary medical college to the brilliant teaching and research position which it has now attained. Only those of the faculty who were here during that period realize the courage and tact which he constantly displayed in bringing about each small advance to a higher level of scholarship.

During a large part of his active life Dr. Jackson was interested in the effects of nutrition upon growth, and his earlier extensive investigations were summarized in 1925 in his book entitled "The Effects of Inanition and Malnutrition upon Growth and Structure."

During the next five years he extended these interests to a study of body build and physique in university students, and much of this work was incorporated in a book in 1930, jointly published by J. A. Harris, C. M. Jackson, D. G. Patterson and R. E. Scammon, entitled "The Measurement of Man."

In the next decade he returned to his earlier interests, analyzing especially the effect of protein and fat-deficient diets on growth. Also, these years were increasingly occupied by his contribution to the teaching of anatomy. In 1933, the ninth edition of Morris Human Anatomy was published under his editorship and he was working on the tenth edition when obliged to turn it over to another because of ill health. Finally, just as he retired, his monumental Report (to the American Association of Anatomists) of the Committee on Anatomical Nomenclature, of which he was chairman, was published. In 1922-24 he had been president of the Association.

The local chapter of Phi Beta Pi medical fraternity, of which Dr. Jackson was a member, has for several years sponsored an annual lecture called the "Jackson Lecture," in which many distinguished scientists have participated.

In the death of Dr. Jackson the Medical School has lost one of its most distinguished professors, and one who will long be remembered lovingly by the hundreds of students who came under the influence of his teaching.

E. T. Bell

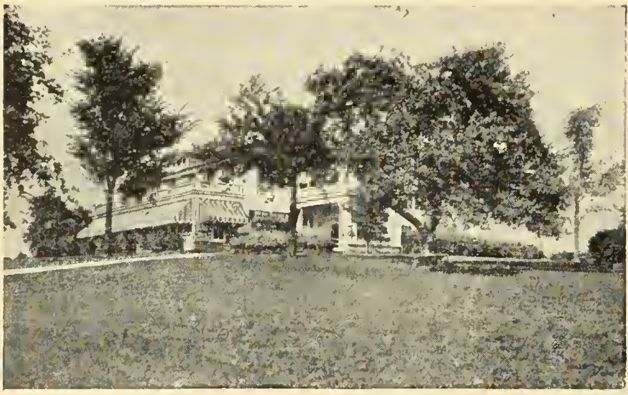
CHEST X-RAY SURVEY

A program unique in the history of health service is being planned for this spring and summer in Minneapolis. Every resident over fifteen will be given the opportunity for a free chest x-ray.

Three mobile x-ray units and seven portable units will be in operation at the same time in various locations in the city beginning May 5. No one will walk more than four blocks for a chest x-ray. Employes in industries which have not already taken advantage of this service will be able to have an x-ray at the plant.

The purpose of this health program is to locate unsuspected cases of tuberculosis, cancer of the lung and heart diseases, according to Dr. Frank J. Hill, city Commissioner of Health.

The program is being sponsored by the Hennepin County Medical Society and the Hennepin County Tuberculosis Association. It is being directed by the Minneapolis Health Department with the co-operation of the U. S. Public Health Service.



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Of General Interest

Dr. H. P. Van Cleve, formerly of Minneapolis, is now located at Dodge Center.

* * *

Drs. A. E. Henslin and Merrill Henslin have moved into a newly furnished suite of offices in Le Roy.

* * *

Dr. C. F. Medlin, Truman, recently moved into his newly constructed office building and is conducting his practice there.

* * *

Dr. F. J. Kucera, Hopkins, attended the twentieth annual convention of the National Conference on Medical Service held in Chicago in February.

* * *

Dr. Paul R. Lipscomb, Rochester, attended the Watson-Jones Fracture Clinic held recently in Chicago under the auspices of the University of Kansas.

* * *

Dr. Frederick Gunlaugson, Moorhead, formerly with the Fargo Clinic, has joined the staff of the state hospital in Fergus Falls. Mrs. Gunlaugson, the former Dr. Eleanor Iverson, was once a member of the same staff.

Dr. Albert V. Stoesser is now located in a new office at 1409 Willow Street, Loring Park, Minneapolis, where he is continuing his practice in allergy and pediatrics.

* * *

Dr. Thomas L. Pool, Rochester, discussed "Some of the Common Errors in Urology" at a meeting of the Ramsey County Medical Society in Saint Paul.

* * *

Dr. E. V. Allen, Rochester, spoke on the clinical use of anticoagulants at a meeting of the Cincinnati Academy of Medicine.

* * *

Dr. Harold N. Rygh, who practiced for a short time in Cokato following his discharge from military service, recently moved to Atwater and opened offices there.

* * *

Opening of a new office in downtown Jackson has been announced by Drs. W. H. Halloran and W. B. Wells of that city.

* * *

Dr. Joseph F. Schaefer, Owatonna, was unanimously elected president of the Steele County Mass X-Ray Committee at the organization meeting held in Owatonna.

(Continued on Page 330)

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A REMARKABLE development which assures accuracy in auscultatory diagnosis.

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Shambaugh, G. E., Jr.: J. Iowa M. Soc. 31:373.

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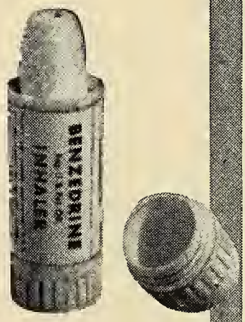

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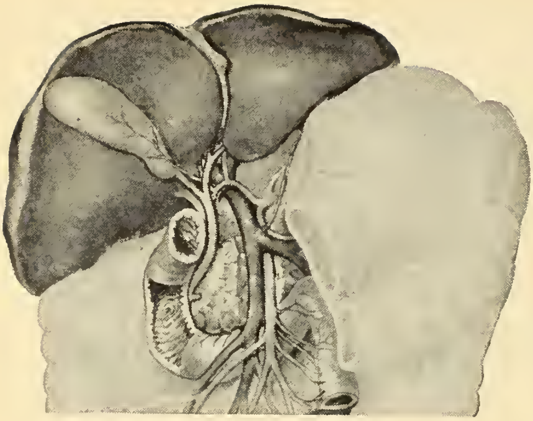

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(Continued from Page 328)

Dr. Henry Van Meier, Stillwater, was reappointed county physician at a meeting of the Washington County commissioners in January.

* * *

Dr. O. V. Johnson, Fergus Falls, has accepted a position as medical consultant in the legal department of the Veterans Administration in Minneapolis.

* * *

Dr. W. W. Brown, who has been with the Veterans Bureau in Minneapolis for the past fourteen years, has moved to Isle where he has opened his practice.

* * *

Dr. L. G. Smith, Montevideo, was one of the twenty-one Minnesota physicians who recently incorporated the Minnesota Medical Service, a nonprofit organization for voluntary prepaid medical care.

* * *

Dr. Chester A. Anderson, formerly of Buffalo, who was recently discharged from the armed forces, has moved to Winsted where he has opened an office for the practice of medicine.

* * *

Dr. T. H. Leitschuh, formerly of Sleepy Eye, has become an associate of Dr. J. A. Cosgriff in Olivia. Since his discharge from the navy after three years of service, Dr. Leitschuh has lived in Minneapolis.

* * *

Two lectures were delivered by O. T. Clagett, Rochester, at a postgraduate course at the George Washington University School of Medicine in Washington, D. C. Dr. Clagett spoke on "Surgery of the Pancreas" and "Recent Advances in Surgery of the Biliary Tract."

* * *

On February 8 in Chicago Dr. John D. Camp, Rochester, presided at the fourteenth annual conference of the Teachers of Clinical Radiology, sponsored by the Commission on Education of the American College of Radiology, of which Dr. Camp is chairman.

* * *

Dr. John M. Waugh, Rochester, presented two papers at a meeting of the Sioux Valley Medical Association, in Sioux City, Iowa. His subjects were "The Acute Conditions of the Abdomen" and "Management of Pelvic Tumors."

* * *

Drs. W. M. Balfour and W. L. Benedict, Rochester, have been named members of the Board of Governors of the American College of Surgeons. Dr. G. B. New, also of Rochester, has been named second vice president of the organization.

* * *

Both Dr. Richard Magraw and Dr. R. F. Mueller, Two Harbors, have discontinued their practice in Lake County. Dr. Magraw has moved to Saint Paul. Dr. Mueller has been enjoying a two-month vacation and has not yet announced his future plans.

(Continued on Page 332)

two traumas

The sick or injured patient is almost simultaneously subjected to two traumas—the basic pathologic process and tissue malnutrition—for malnutrition almost always begins "as soon as injury or disease occurs."[1] Recognition of the vitamin depleting role of dietary restrictions, increased metabolism, glucose infusions, and impairment of absorption, has brought with it the realization that vitamins must be administered in therapeutic—not maintenance—dosages when multiple deficiencies complicate disease. Upjohn provides a full range of maintenance and therapeutic vitamin preparations for oral and parenteral administration.

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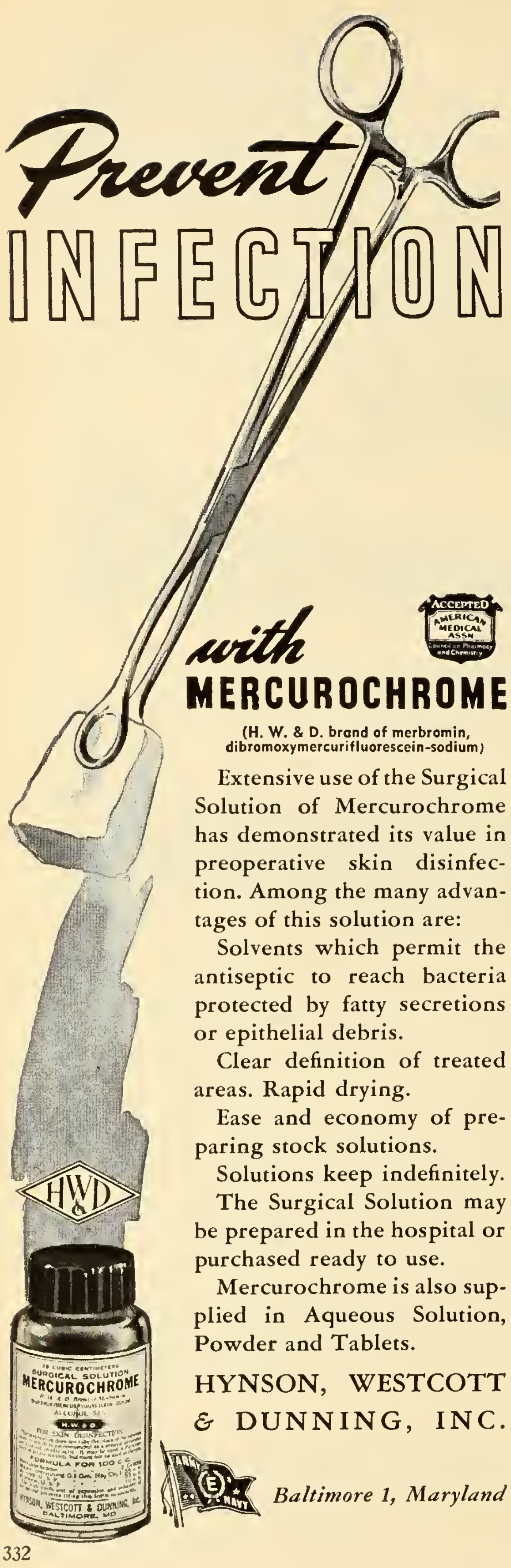

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(Continued from Page 330)

Formation of the Montevideo Clinic took place in January through the association of Dr. L. R. Lima, Jr., and Dr. W. A. Owens, Montevideo. Their now-combined offices have been remodeled and a considerable amount of new equipment has been installed.

* * *

Dr. F. M. McCarten, Stillwater, was appointed coroner by the Washington County commissioners on February 4. A deputy coroner for several years, Dr. McCarten succeeded Dr. J. H. Haines, who had resigned from the office.

* * *

Principal speaker at a meeting of the Arrowhead Society of Medical Technologists, Duluth, was Dr. W. V. Knoll, pathologist at St. Mary's Hospital. Dr. Knoll discussed a color film, "Animated Hematology," which dealt primarily with the blood and bone findings in macrocytic anemias.

* * *

Dr. J. S. Blumenthal, Minneapolis, has been elected chief of staff of St. Andrew's Hospital. Dr. Blumenthal, a practicing physician and surgeon in the Columbia Heights district of Minneapolis for over twenty years, is also an assistant clinical professor of medicine at the University of Minnesota.

* * *

Dr. J. L. Mills, Winnebago, was a member of a delegation which visited Saint Paul in January to get information from the State Board of Health in regard to state recommendations as to hospital building. A hospital drive is planned by Winnebago citizens for this spring.

* * *

Dr. W. R. Lovelace II, Rochester, has announced his resignation from the staffs of the Mayo Clinic and Mayo Foundation to continue the practice of his uncle in Albuquerque, New Mexico. While at the Mayo Clinic, Dr. Lovelace did experimental work with the BLB mask in high altitude flying.

* * *

Dr. C. Anderson Aldrich, Rochester, pediatrician at the Mayo Clinic, spoke on the Rochester child health project at a meeting of the Minneapolis Community Health Service, February 10. Dr. Aldrich also recently addressed the American Orthopsychiatric Association in Cincinnati on "The Pediatrician Looks at Personality."

* * *

Announcement has been made by the Doms-Pierson Clinic, Slayton, of the recent entry of Dr. Richard M. Johnson into the partnership.

Dr. Johnson, a graduate of the University of Nebraska School of Medicine in 1942, was formerly at Manning, Iowa, after completing a tour of service in the navy.

* * *

Dr. Myron O. Henry, Minneapolis, was named president-elect of the American Academy of Orthopedic Surgeons at a recent meeting in Chicago. Dr. Henry,

(Continued on Page 334)

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on the Shores of Lake Michigan

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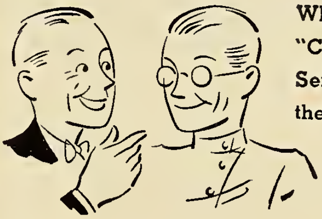

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(Continued from Page 332)

who is president of the Clinical Orthopedic Society and present secretary-treasurer of the Academy, will assume his new office in January, 1948, succeeding Dr. Rex L. Diveley, New York.

* * *

Dr. Walter C. Alvarez, professor of medicine at the Mayo Foundation, Rochester, spoke at the thirty-seventh annual meeting of the Jewish Family and Children's Service of Minneapolis, held February 19 at the Radisson Hotel in Minneapolis. An internationally recognized authority on psychosomatic medicine, Dr. Alvarez discussed "What Makes People Sick."

* * *

Dr. W. E. Macklin, Jr., Litchfield, joined the staff of the Mankato Clinic on March 1 as radiologist. A physician in Litchfield for twelve years, Dr. Macklin served in the navy in World War II. Since his discharge, he has been taking graduate work in the Department of Radiology at the University of Minnesota. He recently passed the examination of the American Board of Radiology.

* * *

Dr. Waltman Waters, Rochester, and Dr. Shields Warren, assistant professor of pathology, Harvard Medical School, have been appointed to serve on the National Advisory Cancer Council by Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service. Dr. Walters was first appointed to the Council in 1941, but service in the navy interrupted his connection with the Council.

* * *

On January 20, 1947, Drs. Robert E. Priest, Lawrence R. Boies and Neill F. Goltz presented a paper at the Middle Section meeting of the American Laryngological, Rhinological and Otological Society in Chicago. The paper summarized the experiences at the University of Minnesota Hospitals and the Minneapolis General Hospital with tracheotomy in bulbar poliomyelitis during the epidemic of 1946.

* * *

Dr. Alfred S. Nelson, Thief River Falls, has become affiliated with the Bratrud Clinic of that city, specializing in internal medicine. A graduate of the University of Minnesota Medical School in 1943, Dr. Nelson interned at Ancker Hospital, Saint Paul, and then served for twenty-six months in the army medical corps. His major assignment was at a general hospital in Manila, Philippine Islands.

* * *

Dr. Robert M. Watson, formerly of Royalton, is now affiliated with the Bratrud Clinic in Thief River Falls, in the capacity of obstetrician and gynecologist. Following graduation from the University of Minnesota Medical School and internship at Miller Hospital, Saint Paul, Dr. Watson served for eighteen months in the army medical corps. While stationed at Lovell General Hospital, Fort Devens, Massachusetts, he was assistant chief of surgery in charge of obstetrics and gynecology.

Under the subsidization of the Hennepin County Tuberculosis Association, a broad new health program is being launched in Minneapolis public schools, with Helen Starr, associate professor of physical education at the University of Minnesota, as director.

In addition to handling accident and emergency cases, the health program includes careful control of communicable diseases, emphasis on physical education for every child in school, and intensified health instruction.

* * *

"Cicatricial Stenosis of the Nasopharynx: Correction by Means of a Skin Graft" was the subject of a talk by Dr. F. A. Figi, Rochester, before the Southern Section of the American Laryngological, Rhinological and Otological Society, at a meeting in Miami Beach, Florida. While in Florida, Dr. Figi also presented two papers at the midwinter postgraduate course in otolaryngology and ophthalmology held by the Graduate School of Medicine of the University of Florida.

* * *

Offices have been opened at the Two Harbors Hospital by Dr. Ralph Papermaster and Dr. Harry N. Simmonds. Dr. Papermaster, who is specializing in surgery, was a surgical resident at Minneapolis General Hospital for three years, and served as head of an army surgical team in the European theatre for two years. Dr. Simmonds, who will do general practice, interned at Columbus Hospital in New York City and then served for two and one-half years in the army medical corps.

Dr. Ward Norton Van Potter and Dr. Viola Ellen Sheridan, both of whom hold Fellowships at the Mayo Clinic, were married on December 28, 1946, in Rochester. Dr. Sheridan, a graduate of the Medical College of Creighton University, Omaha, Nebraska, interned at the Women's and Children's Hospital in San Francisco. Dr. Potter, a graduate of the Medical College of the University of Toronto, Ontario, interned at the General Hospital in Montreal, Quebec, Canada.

* * *

Dr. Francis E. Harrington, former superintendent of Minneapolis General Hospital and former commissioner of Minneapolis, was praised in an article in a recent issue of the *Journal-Lancet* for building an outstanding anti-tuberculosis program for Minneapolis. The article, written by Dr. J. A. Myers, professor of public health at the University of Minnesota, states: "Under Dr. Harington's leadership, tuberculosis has reached such a low ebb in Minneapolis that workers are beginning to talk about eradication, rather than control of the disease."

* * *

CORRECTION—In the announcement of the opening of the offices of Dr. Frank W. Quattlebaum and Dr. Jane E. Hodgson, which appeared in the January issue of MINNESOTA MEDICINE, it was incorrectly stated that Dr. Quattlebaum had served a fellowship in obstetrics and gynecology at the Mayo Clinic. Dr. Quattlebaum took his training in surgery at the University of Minne-

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sota and at the Mayo Clinic. His associate, Dr. Jane Hodgson, completed her fellowship in obstetrics and gynecology at the Mayo Clinic in 1944 and is limiting her practice to this specialty.

* * *

Believed to be Minnesota's oldest practicing physician, Dr. George D. Haggard, Minneapolis, celebrated his ninetieth birthday on January 18.

Born in 1857 in Fairpoint, near Rochester, while Minnesota was still a territory, Dr. Haggard has served three generations of many of the state's oldest families. He graduated from the University of Minnesota Medical School in 1893 and interned at Minneapolis General Hospital. For four years he was health officer of Minneapolis. At present he is on the staff of Northwestern and Asbury hospitals. He still answers many calls, though a heart attack six months ago forced him to curtail his activities.

* * *

Dr. and Mrs. Moses Barron, Minneapolis, were guests of honor at the annual Jewish National Fund dinner, held January 26 at the Radisson Hotel. In recognition of Dr. and Mrs. Barron's twenty-five years of leadership in Minneapolis Jewish affairs, nearly 100 organizations gathered to present the couple with a book bearing the names of contributors to the development of a forest in Palestine that will be named for the Barrons.

Dr. Barron, a professor of medicine at the University of Minnesota, is a past president of the Hennepin County Medical Society, the Minnesota Society of Internal Medicine, the Minnesota Pathological Society, and the Minneapolis Academy of Medicine.

* * *

Dr. Victor Johnson, Chicago, dean of students in biology and medicine and professor of physiology at the University of Chicago, will become director of the Mayo Foundation for Medical Education and Research next fall. He will succeed Dr. Donald C. Balfour, present director, who is scheduled to retire in October, 1947.

Dr. Johnson, author of several articles and books, is a member of numerous scientific and educational organizations and is on the advisory committee of the Surgeon General, United States Public Health Service, in administration of the Federal Hospital Survey and Construction Act. To accept the Mayo appointment, he resigned as secretary of the AMA Council on Medical Education and Hospitals.

Following retirement, Dr. Balfour, who has been director of the Mayo Foundation since 1937, will serve as director emeritus and as professor of surgery emeritus in the University of Minnesota graduate school.

* * *

Five physicians comprised the medical staff of the Bemidji Clinic when it opened the doors of its new building in January. Drs. D. F. McCann, T. P. Groschupf, and D. D. Whittmore, Bemidji, were joined by Drs. W. J. Deweese and S. F. Becker to form the

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clinic group which will practice in the recently completed office building.

Dr. Deweese, a graduate of the University of Nebraska Medical School and a veteran of World War II, has completed a residency in surgery at the Kings County Hospital in New York. Dr. Becker, who graduated from the University of Minnesota Medical School before serving in the navy, was formerly a member of the Bratrud Clinic in Thief River Falls. More recently he has been doing graduate work at the University of Minnesota.

Negotiations are in progress to add other members to the clinic staff, and the founders hope to have the group completed by early summer.

HOSPITAL NEWS

Harry Rice, Afton township, was made a member of the Lakeview Hospital board at the meeting of the Washington County commissioners in January. He succeeded Lou Orr, who had previously resigned.

* * *

Named president of the St. Cloud Hospital medical staff at the annual meeting in January was Dr. F. J. Schatz. He succeeded Dr. J. N. Libert. The staff elected Dr. S. J. Raetz as vice president, and Dr. F. H. Baumgartner, secretary.

* * *

Dr. Charles A. Aling was named medical staff chairman of St. Barnabas Hospital, Minneapolis, at the annual staff meeting February 5. Dr. Elmer J. Lillehei was elected vice chairman, and Dr. William E. Proffitt became secretary-treasurer.

* * *

At the annual staff meeting of Eitel Hospital, Minneapolis, Dr. Frank R. Hirschfield was elected chief of staff to succeed Dr. William R. Jones. Dr. Ray Cochrane was chosen assistant chief of staff, and Dr. Gordon G. Bowers was elected secretary.

* * *

In Brainerd, Dr. J. A. Thabes, Sr., has been elected chief of staff of St. Joseph's Hospital, succeeding Dr. V. E. Quanstrom, Dr. R. A. Beise has been selected to place Dr. W. E. Fitzsimons as vice chief of staff, and Dr. Fitzsimons has succeeded Dr. J. A. Thabes, Jr., as secretary-treasurer.

* * *

With his re-election as president, Dr. J. E. O'Donnell heads the staff of St. Mary's Hospital, Minneapolis, for a second term. Dr. F. B. Mach is serving as vice president, and Dr. L. J. Happe is secretary-treasurer. These three men, together with Dr. Leo C. Culligan, Dr. B. A. Dvorak and Dr. L. A. Lang, form the advisory board of the hospital.

* * *

On January 10, Dr. A. J. Spang was elected chief of staff of Miller Memorial Hospital, Duluth, at the medical staff's annual meeting. Other officers named were Dr. K. R. Fawcett, vice chief of staff, and Dr. Karl Johnson, secretary-treasurer. Dr. A. L. Abraham and Dr. Miriam Fredericks were elected as new members

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of the executive committee, while Dr. Mario Fischer was named an ex-officio member.

* * *

Two New Ulm hospitals elected officers at annual staff meetings on January 9.

Heading the Loretto Hospital staff are Dr. Carl J. Fritsche, president; Dr. O. B. Fesenmaier, vice president, and Dr. O. J. Seifert, secretary.

Union Hospital officers are Dr. H. A. Vogel, president; Dr. O. J. Seifert, vice president, and Dr. Carl J. Fritsche, secretary.

* * *

Organization of a community hospital board in Blue Earth was completed in early January. John Frundt was elected president of the board, Martin Madison, vice president, and Frances Schneider, secretary-treasurer.

President at a later meeting of the board were the local doctors of Blue Earth, as well as Dr. C. D. Snyder, Kiester; Dr. A. W. Sommer, Elmore, and Dr. Lewis Hanson, Frost. The board selected Minnie Fenske as superintendent of the hospital. A medical staff was organized, with Dr. C. E. Wilson as head.

* * *

Hibbing General Hospital has selected Dr. T. A. Estrem as chief of staff, Dr. C. N. Harris as vice president, and Dr. T. R. Schweiger as secretary.

Department heads named at a staff meeting in January are Dr. L. W. Johnsrud, surgery; Dr. L. S. Nelson, internal medicine; Dr. L. W. Morsman, ophthalmology; Dr. Andrew Sinimark, otolaryngology; Dr. C. N. Harris, pediatrics; Dr. Frank Bachnik, obstetrics; Dr. A. C. Tingdale, communicable diseases and contagion; Dr. C. S. Raadquist, x-ray; and Dr. Randall Derifield, laboratory.

* * *

The position of executive administrator of Northwestern Hospital, Minneapolis, was assumed on March 1 by Russell Nye, former administrator of the Dallas, Texas, city-county hospital system.

Mr. Nye, who before his new appointment was president-elect of the Texas Hospital Association has held administrative positions at Michael Reese Hospital in Chicago, Crawford-Long Memorial Hospital in Atlanta, and the University of Iowa Hospitals. He succeeds Colonel Harry Brown, who has been on military leave and who will return to active army duty.

* * *

Chief of staff of St. Luke's Hospital, Duluth, for 1947 is Dr. A. O. Swenson, who was recently elected to succeed Dr. Anderson C. Hilding.

Also named by the hospital staff were Dr. Gordon C. MacRae, vice chief of staff; Dr. J. R. Manley, chief of obstetrics; Dr. Peter S. Rudie, chief of surgery; Dr. R. E. Nutting, chief of pediatrics; Dr. M. F. Fellows, chief of eye, ear, nose and throat; and Dr. A. H. Wells, chief of pathological laboratories. Dr. F. J. Hirschboeck, Dr. A. L. Abraham, and Dr. C. M. Bagley, secretary, were named to the executive committee.

* * *

Earl C. Wolf, purchasing agent of St. Mary's Hospital in Rochester, was named president of the Minnesota

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Hospital Association at a meeting of the board of directors in Minneapolis on January 18.

Former first vice president of the Association, Mr. Wolf was appointed to serve out the unexpired term of the late W. W. Sherman, who was superintendent of the Naeve Hospital in Albert Lea. His tenure will expire May 15, when the Association holds its annual meeting in Minneapolis.

Emil Hanson, superintendent of Winona General Hospital, was elected to Mr. Wolf's former office.

* * *

Election of Dr. L. R. Gowan as chief of staff of St. Mary's Hospital, Duluth, was announced on February 7. He replaces Dr. J. E. Power in the position.

Other staff officers of the hospital, elected at the same time, are Dr. C. O. Kohlbry, president-elect; Dr. F. T. Becker, secretary of the staff; Dr. R. P. Buckley, chief of pediatrics, and Dr. A. J. Bianco, chief of surgery.

Officers continuing from 1946 are Dr. Frank Cole, chief of anesthesiology; Dr. J. A. Winter, chief of eye, ear, nose and throat; Dr. C. W. Taylor, chief of contagion; Dr. E. L. Tuohy, chief of laboratories; Dr. Richard Bardon, chief of medicine; Dr. L. E. Schneider, chief of neurology; Dr. J. R. Moe, chief of obstetrics; Dr. M. H. Tibbetts, chief of orthopedics, and Dr. M. A. Nicholson, chief of urology.

MASSIVE GASTRIC HEMORRHAGE

(Continued from Page 319)

Discussion

Dr. Hamlin Mattson: In the first section you showed, isn't that sufficient to give a diagnosis of ulcer in the mucous membrane?

Dr. G. H. Hall: Yes. The pathologist called it a small acute ulcer.

Dr. Hamlin Mattson: From what part of the stomach was that taken?

Dr. G. H. Hall: The posterior upper portion of the resection.

Dr. John R. Paine: I should like to ask some of the experienced surgeons what a surgeon is supposed to do if he operates for an ulcer and does not find an ulcer. Do you leave the stomach in or take it out?

Dr. Willard White: I don't pretend to be able to answer the question, but if you have a patient into whom you are pouring blood and he is pouring it back as fast as you pour it in, you have to do something, and I think that resection is exactly the thing to do. I have had to make this same decision, myself.

Dr. John R. Paine: It is a pure and simple gamble. The only bad thing is that you have to take out the stomach. The ulcer may be somewhere else.

Dr. J. M. Hayes: In speaking of gastric hemorrhage, we must refer back to a previous discussion before this society on the use of Koagmin. Dr. Arnold Jackson of Madison popularized this drug in this vicinity. Those who have given it a trial are usually enthusiastic about the results. I have used it several times in case of severe gastric hemorrhage and agree with Jackson that it will often check the hemorrhage sufficiently to defer an emergency operation.

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Practical Physiological Chemistry. Twelfth Edition. Philip B. Hawk, Ph.D., President and Bernard L. Oser, Ph.D., Director, Food Research Laboratories, Inc., New York; and William H. Summerson, Ph.D., Associate Professor of Biochemistry, Cornell University Medical College, New York. 1323 pages. Illus. Price, $10.00, cloth. Philadelphia: The Blakiston Co., 1947.

Radiology for Medical Students. Fred Jenner Hodges, M.D., Professor and Chairman, Department of Roentgenology, University of Michigan; Isadore Lampe, M.D., Associate Professor, Department of Roentgenology, University of Michigan, and John Floyd Holt, M.D., Assistant Professor, Department of Roentgenology, University of Michigan. 424 pages. Illus. Price, $6.75, cloth. Chicago: Year Book Publishers, 1947.

The Compleat Pediatrician. Practical, Diagnostic, Therapeutic and Preventive Pediatrics. Fifth Edition. Wilbur C. Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University School of Medicine and Pediatrician Duke Hospital; formerly Acting Head of Department of Pediatrics, Johns Hopkins University School of Medicine, etc. Price, $3.75 check with order, or $4.00 on credit, cloth. Durham, N. C.: Duke University Press, 1946.

Fundamentals of Clinical Neurology. H. Houston Merritt, M.D., Professor of Clinical Neurology, College of Physicians and Surgeons, Columbia University; Chief of Division of Neuropsychiatry, The Montefiore Hospital; Fred A. Mettler, M.D., Ph.D., Associate Professor of Anatomy, College of Physicians and Surgeons, Columbia University, and Tracy Jackson Putnam, M.D., Professor of Neurology and Neurological Surgery, College of Physicians and Surgeons, Columbia University, New York. 289 pages. Illus. Price, cloth, $6.00. Philadelphia: The Blakiston Co., 1947.

Health Examinations. A Manual for the General Practitioner. Prepared for Medical Society of the County of New York, by the Special Committee on Preventive Medicine. 144 pages, paper cover. Presented with the compliments of Mead Johnson & Company, Evansville, Indiana, 1947.

SHOCK TREATMENTS AND OTHER SOMATIC PROCEDURES IN PSYCHIATRY. L. B. Kalinowsky, M.D., Research Associate in Psychiatry, College of Physicians and Surgeons Columbia University, and New York State Psychiatric Institute and Hospital, Assistant Neurologist, Neurological Institute of New York; and Paul H. Hoch, M.D., Assistant Clinical Psychiatrist, New York State Psychiatric Institute and Hospital; Instructor in Psychiatry, College of Physicians and Surgeons, Columbia University. 320 pages. Price $4.50. New York: Grune & Stratton, Inc., 1946.

This is a very well-organized, authoritative, easy-to-read treatise on, primarily, shock treatment but it deals also with other somatic non-surgical treatment, prefrontal lobotomy, and theoretical considerations in relation to this phase of psychiatric therapy.

A brief review of historical development is given, and comprehensive and detailed practical instruction in the

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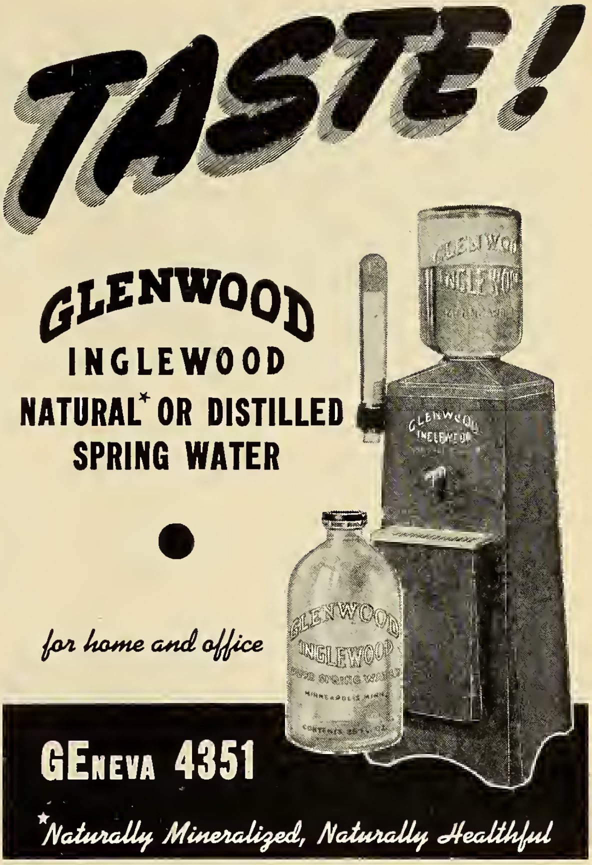

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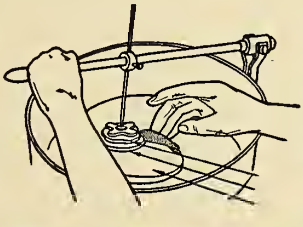

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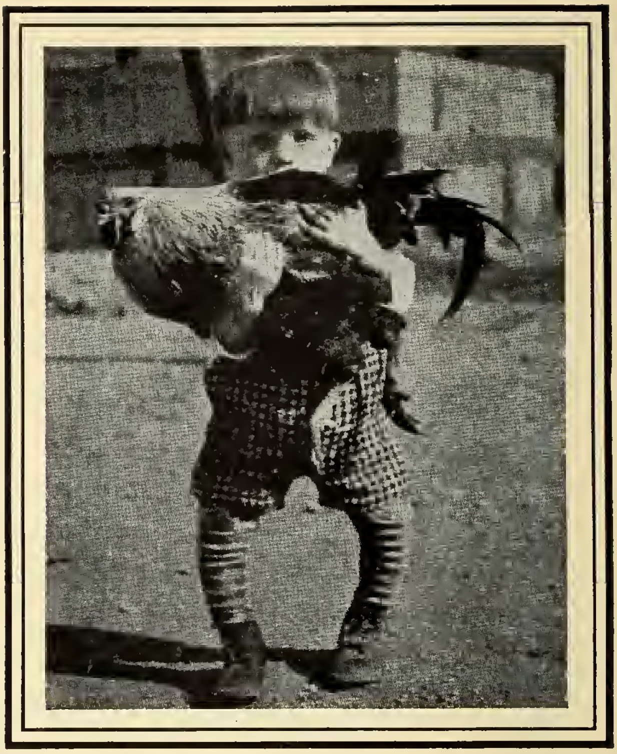

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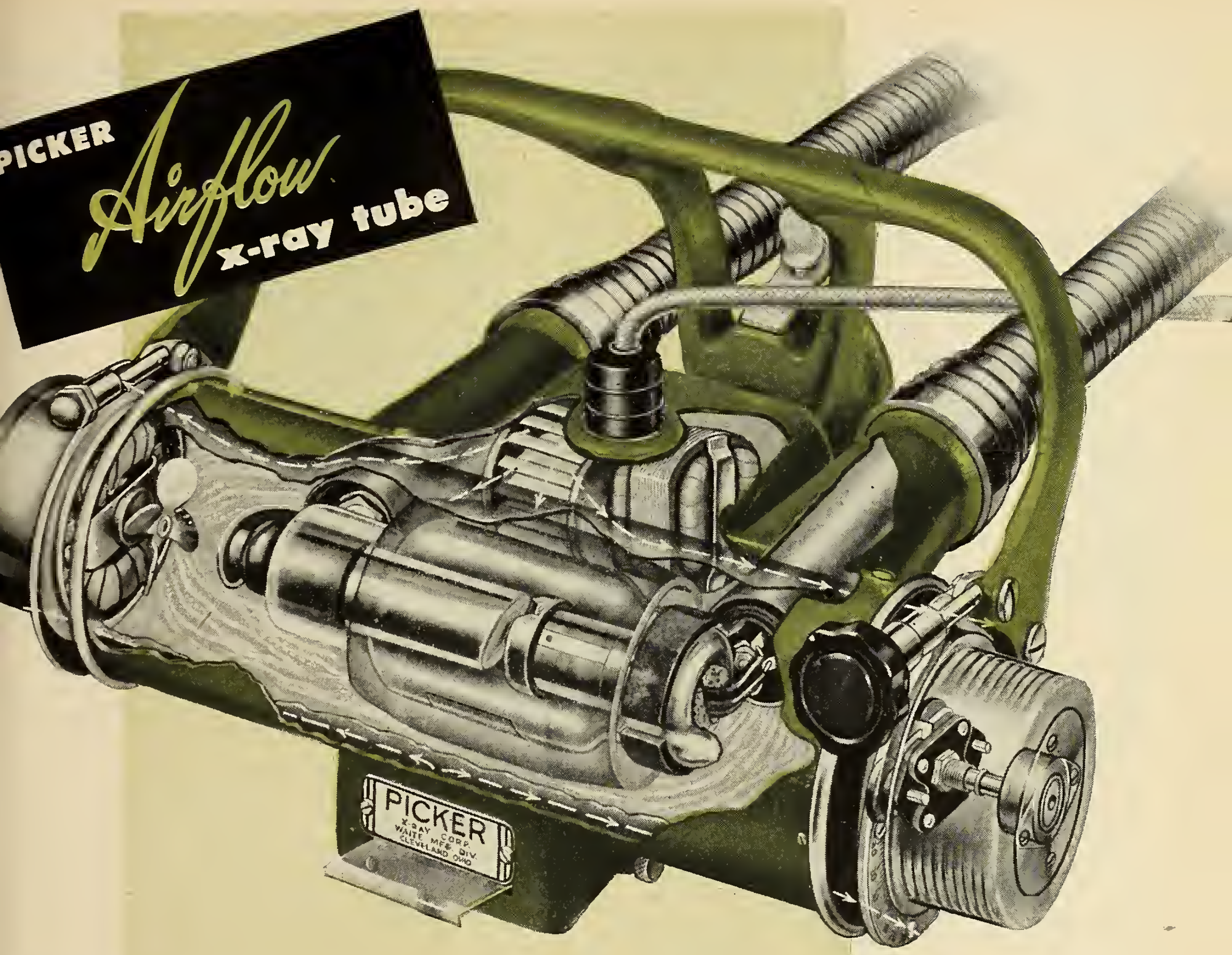
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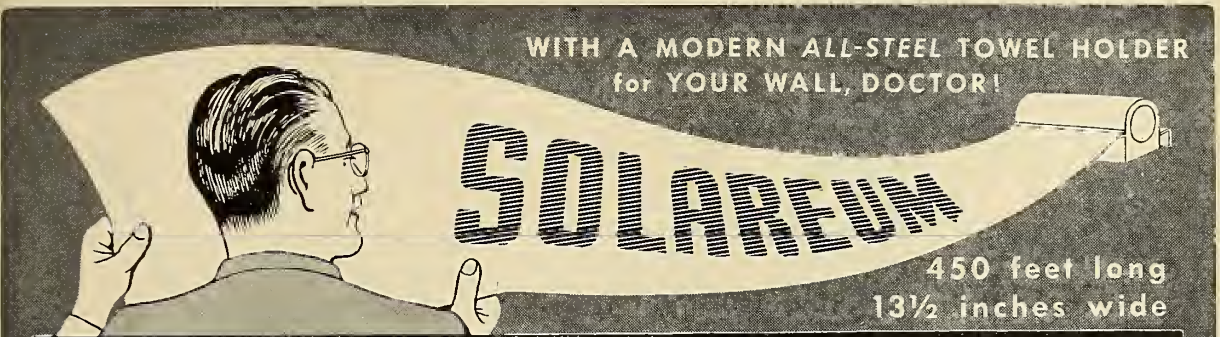

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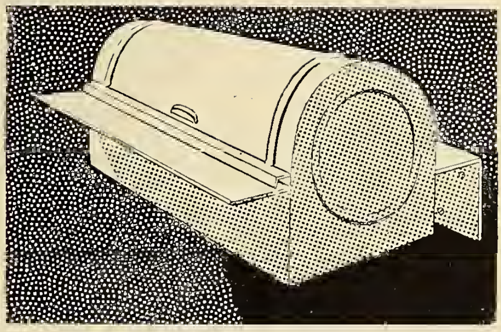

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COUNCIL ACCEPTANCE

Pyribenzamine now has been formally accepted by the A.M.A. Council on Pharmacy and Chemistry. A report to the Council on anti-histaminic agents was written by S. M. Feinberg, M.D., in the November 23, 1946 issue of the J.A.M.A. Pyribenzamine was found to be highly effective, and produces relatively few side effects.

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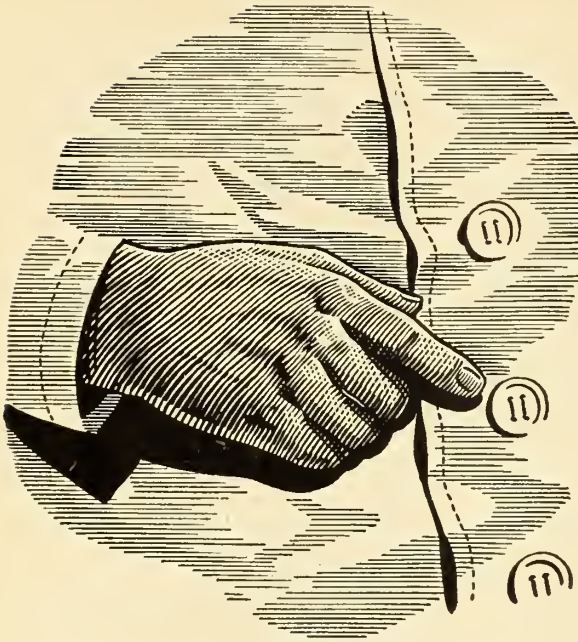

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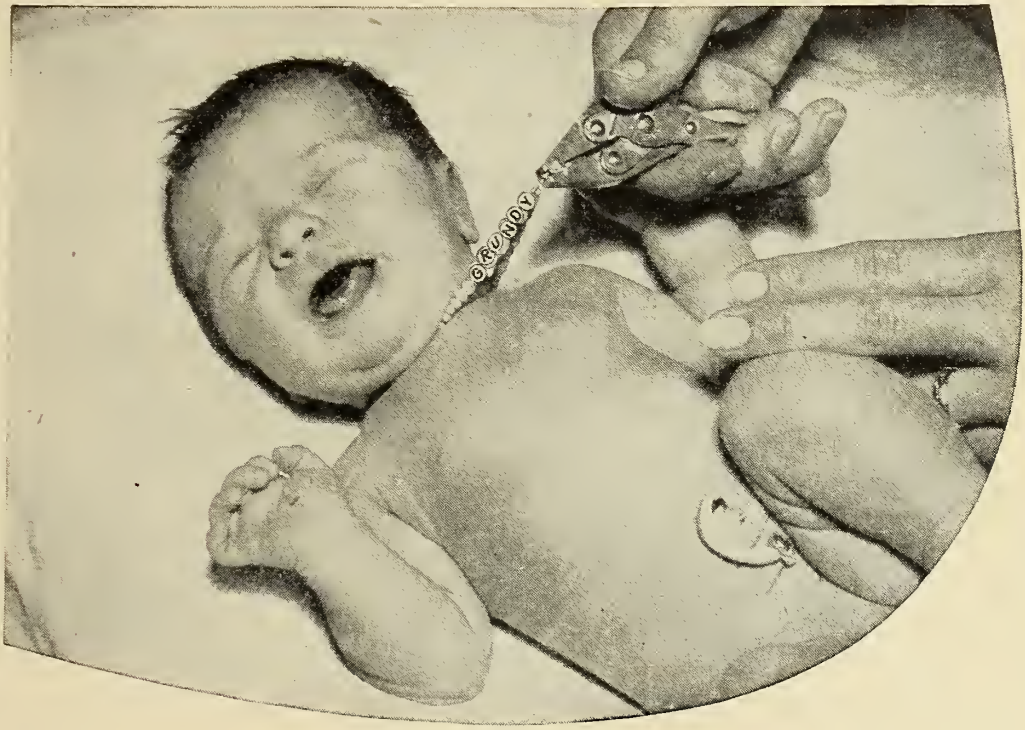

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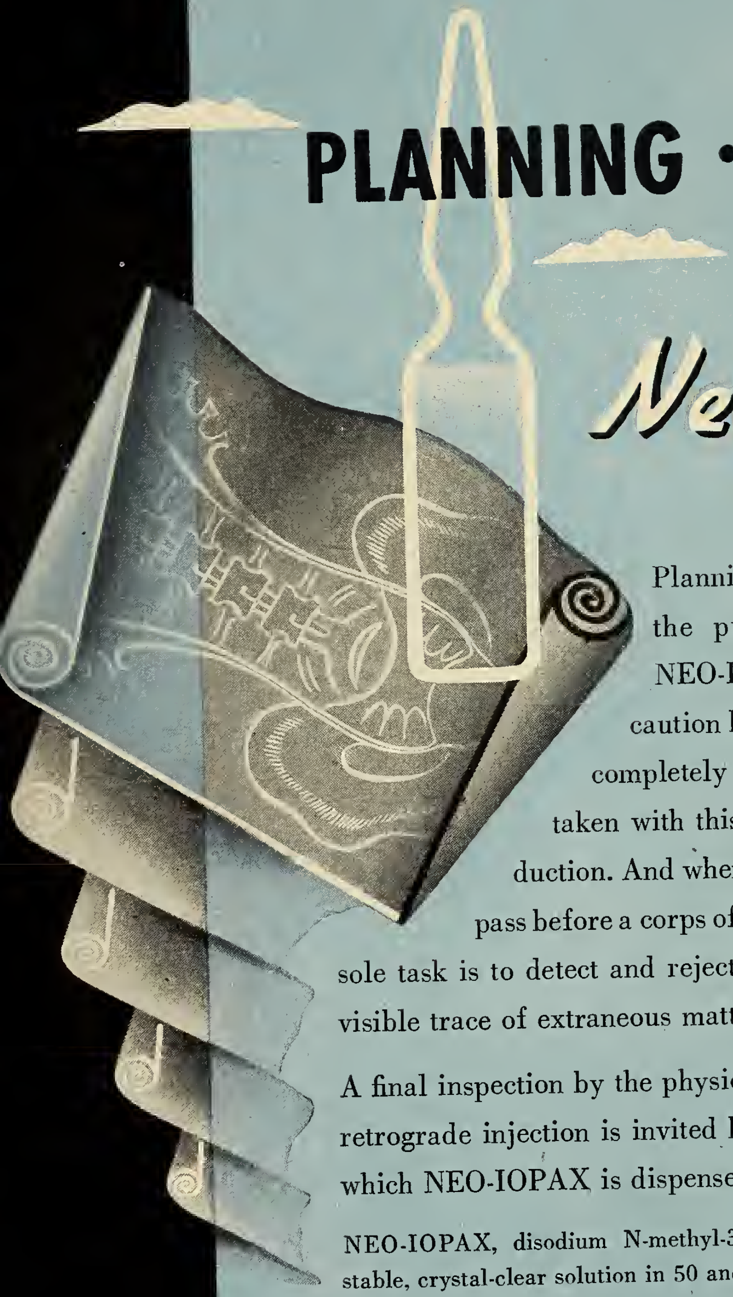

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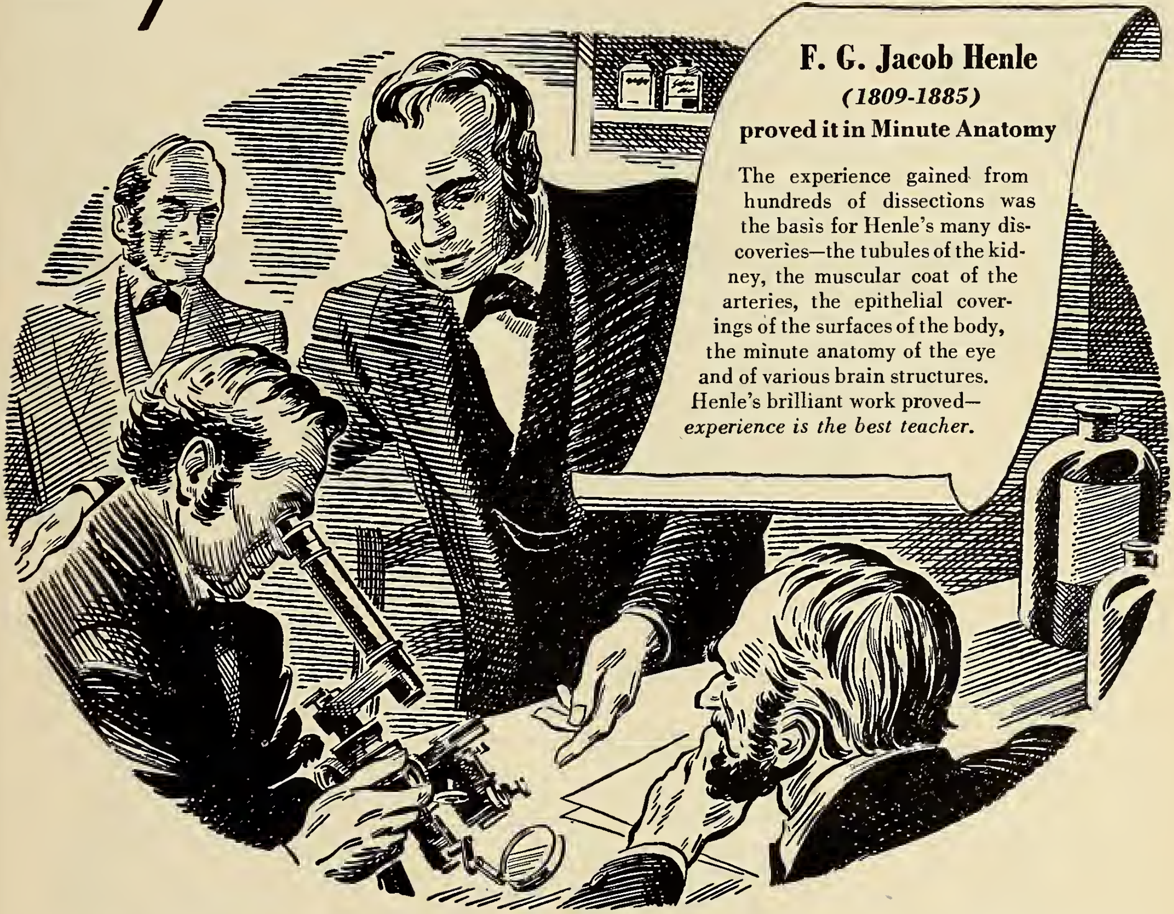

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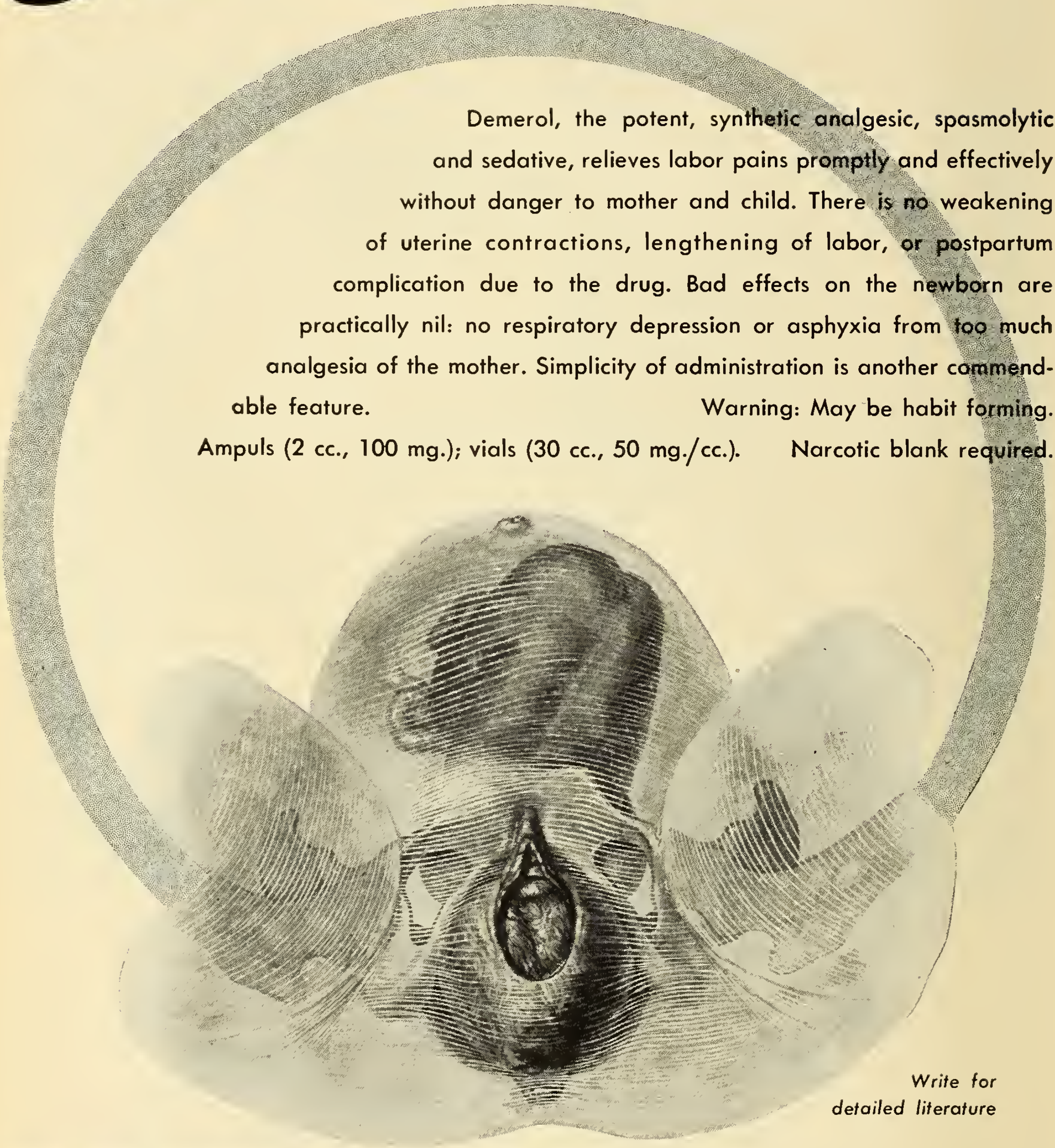

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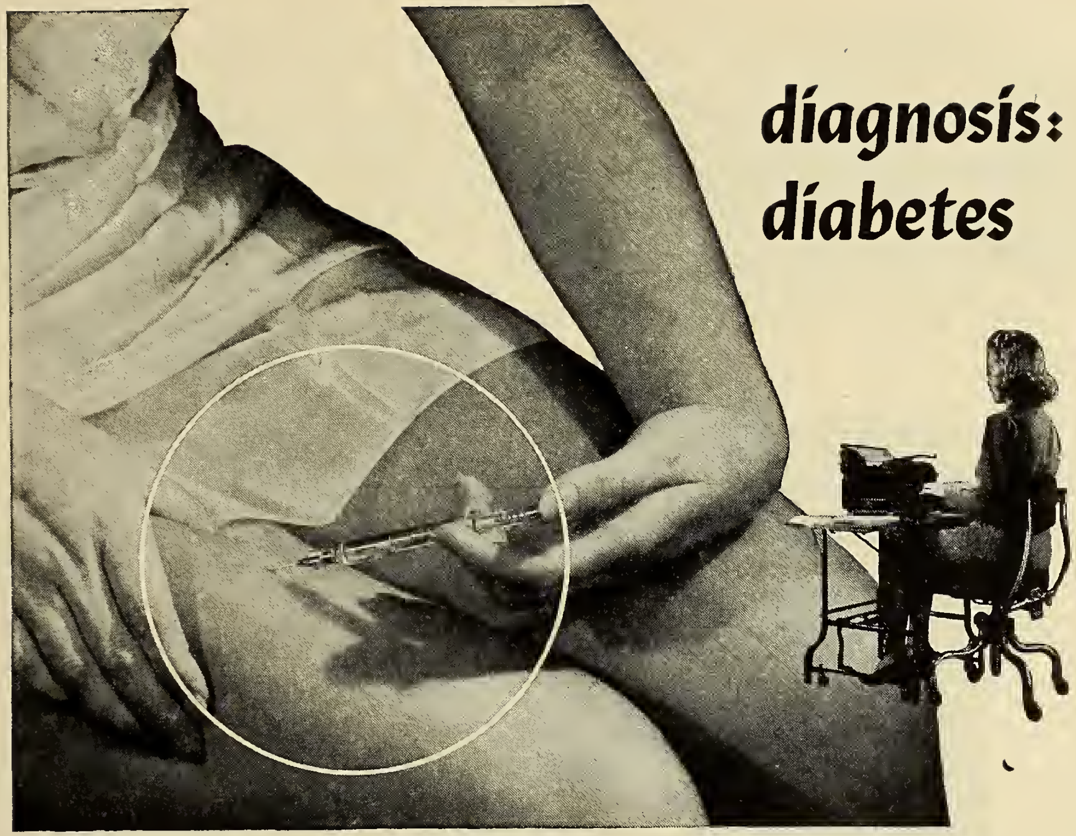

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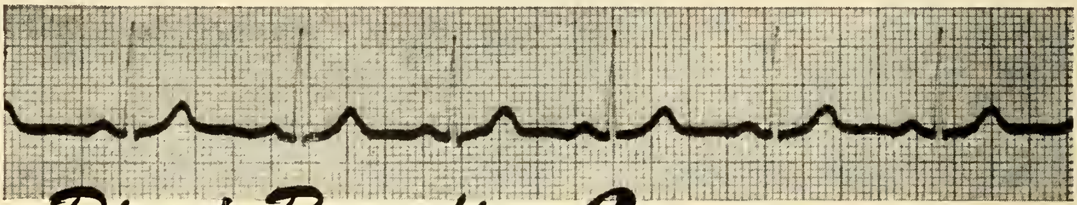

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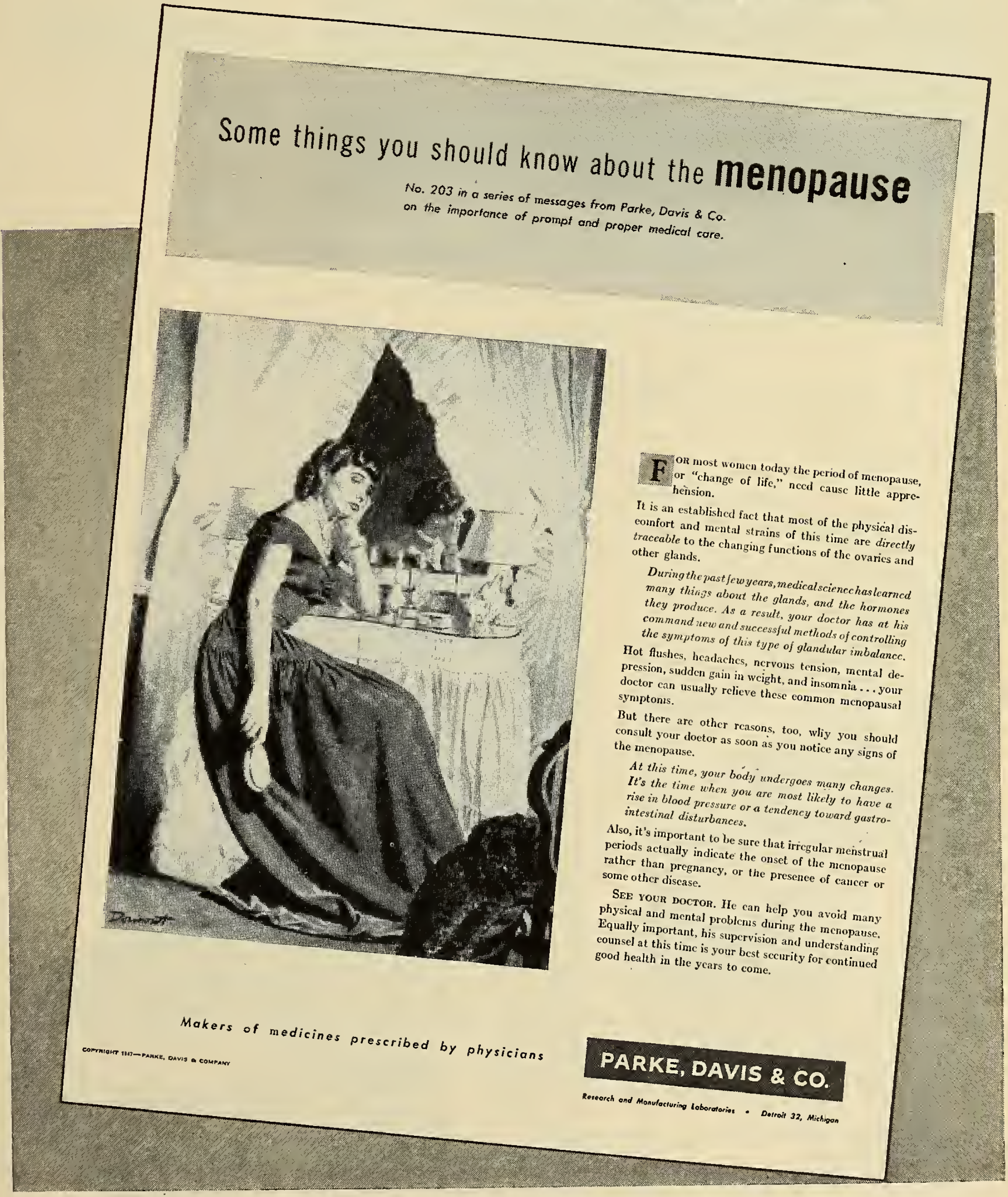

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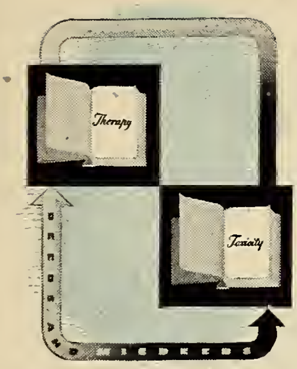

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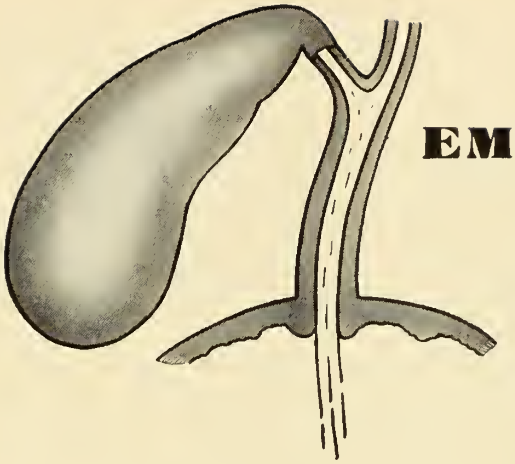

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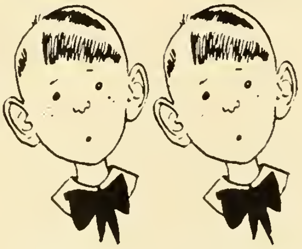

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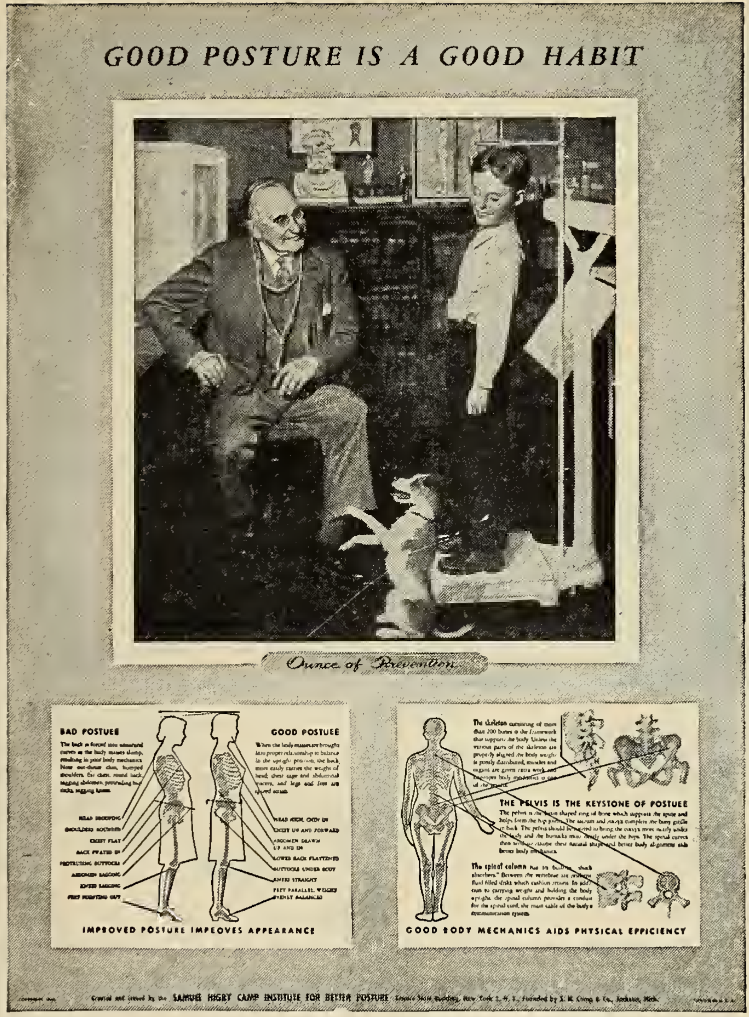
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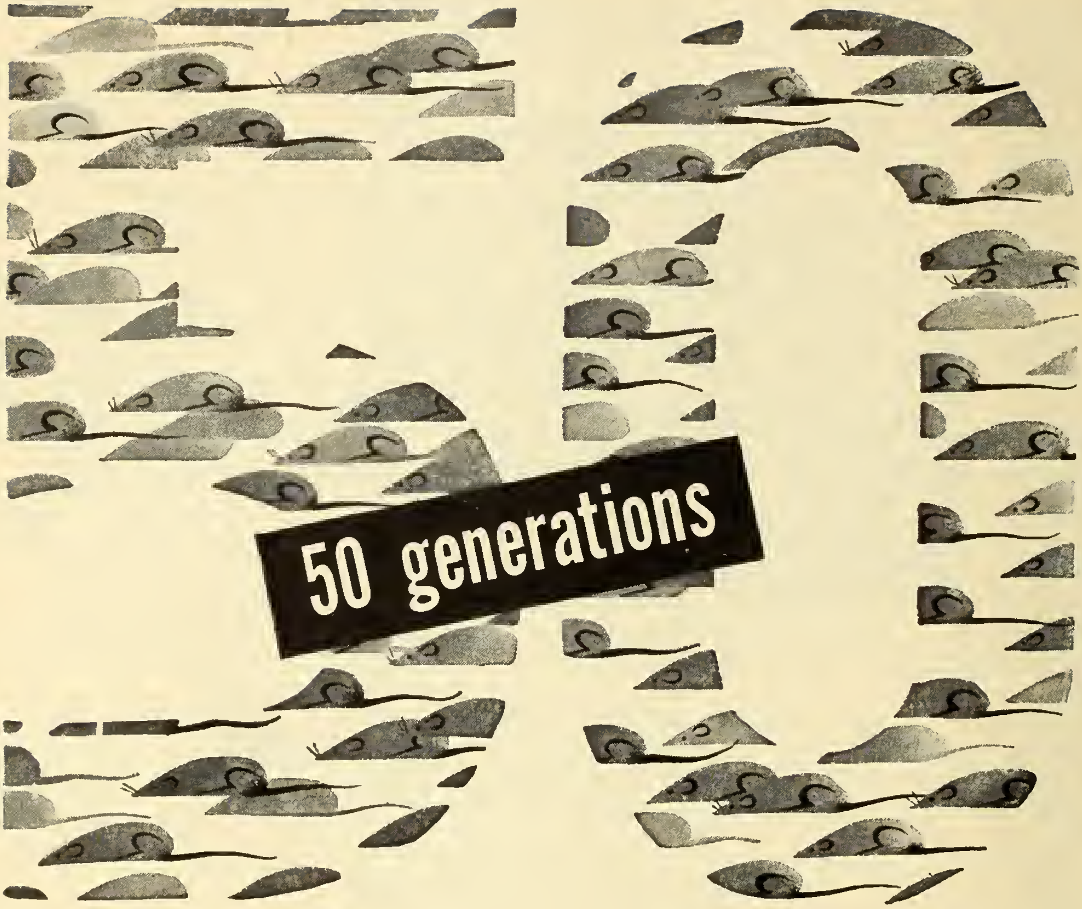

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1. National Research Council Bull. No. 109 (Nov.) 1943, p. 36.
2. Southern M. J. **3**:172 (Feb.) 1946.
3. Statistical Bull. Metropolitan Life Ins. Co. **27**:6 (Dec.) 1946

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 April, 1947 No. 4

MEDICAL SERVICE PROGRAM IN THE VETERANS ADMINISTRATION HOSPITALS

GENERAL PAUL R. HAWLEY
Washington, D. C.

IN RECENT months the demands of my work have forced me to limit my speaking engagements to a minimum. I have made an exception in the case of your invitation solely because I wanted very much to come here and tell you personally how much I appreciate the support of this department of the American Legion in our effort to improve the quality of medical care given the veteran. You have been tolerant of our mistakes and patient with the slowness of our improvements. I feel, however, that you have realized that we have only one objective and that is to give the veteran the very best of medical care.

On my part, I have come to regard this department of the American Legion as an unselfish organization devoted to the true welfare of the veteran. I have never received any recommendation from the officers of your department which was in any way biased by political considerations. I congratulate you upon such leadership.

In coming here to thank you for your help and co-operation, I do not mean to imply that I resent criticism, or that I regard all criticism as an unfriendly gesture. I expect criticism—in fact, I would say that I welcome criticism. But I do hope that criticism will be well-informed, that it will be based upon fact, and that it will not be prompted by selfish or self-seeking motives.

One of the situations for which we are criticized frequently is that we do not have enough hospital beds to care promptly for every veteran who seeks admission to a hospital. This is quite true. There are several reasons for this, but the only cogent reason is that we are unable at this time to obtain a sufficient number of physicians of proper quality to operate any more beds than we are now operating. I want to emphasize this qualification of "proper quality" when I speak of physicians.

I am constantly amazed at the number of people in this country—at least, at the number who come into my office—who seem to think that a doctor is a doctor, that all doctors are equally trained and equally competent. These people descend upon me in delegations, insisting that I take over and operate a surplus army or navy hospital in their home towns. When I point out that I must have a great deal of help from local physicians, since we do not have enough full-time specialists in the Veterans Administration, they assume an injured expression and say, "Why, we have the finest doctors in the country in our town, and they would all be glad to help."

Then, when I investigate the training and the qualifications of the doctors in their town, I find perhaps one or two specialists of real training and the rest general practitioners. Now, mind you, I have no doubt but that these general practitioners are excellent as general practitioners, and I could not have any but the highest regard for general practitioners of medicine. My grandfather was a general practitioner; my father was a general practitioner; and I started my career in medicine as a general practitioner. In our hometown plan for outpatient treatment of veterans with service-connected disabilities, we shall use the services of thousands of general practitioners throughout the United States, and they will give

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Address delivered at a meeting of the Department of Minnesota, the American Legion, St. Cloud, Minnesota, August 13, 1946.

the veterans the finest of care. Furthermore, when we general practitioners have a patient who requires the care of a specialist, we refer that patient to a specialist.

So, when a veteran needs a specialist, he must have a specialist. The great majority of hospital cases are of a severity that requires the attention of a specialist; and we would be short-changing the veteran in a shameful fashion if we offered him one kind of a doctor when he needed another kind of a doctor.

Now, here is my position. It may be wrong, but it is the position of a doctor who is concerned only with the welfare of his patients. I do not want to operate any more hospital beds than I can operate at a standard that the veteran deserves. I do not want to offer the veteran any medical service of poor quality. I much prefer to offer him none at all than to offer him some that may cost him his life or his future health. I want the veteran to feel that, when he comes to the Veterans Administration, sick or disabled, he will get only first-quality medical care. It would be an empty gesture—nay, it would be criminal—to offer the veteran *poor* medical care in order to offer him *more* medical care. We want quantity—yes—but we shall not sacrifice quality merely to produce quantity.

But a much more vicious form of criticism is beginning to arise. Our motives have been questioned in certain quarters. The program has been attacked by certain organizations. Some of these critics may be sincere, but if so, they are misinformed. However, I think the time has come to speak frankly—some of them unquestionably are motivated by selfish, personal greed.

A year ago the Medical Service of the Veterans Administration was made up of a few outstanding men in medicine, of a number of what might be called average medical men, and of some distinctly inferior medical men. As is always the case, one poor man can do more harm than ten good men can do good. So the medical service of the Veterans Administration suffered severely from the reputation given it by the poor element.

The veterans' organizations and the public were demanding improvement of this medical service. They were demanding the weeding out of incompetents. Well, we have tried to weed out the incompetents. Some of them we have dismissed. Others we have moved to positions of lesser responsibility. A doctor may be incompetent to do major surgery but reasonably competent to make routine physical examinations. As rapidly as possible, we have replaced incompetents with well-trained and able physicians, either on a full-time or a part-time basis.

Here is one curious result of our efforts to give the veteran better doctors. Some—not all, of course—of the same people, some of the same organizations, who one year ago were damning the medical service of the Veterans Administration, have now taken up cudgels in behalf of the incompetent doctors who have been replaced. They are attacking our program solely upon this ground. But—remember this—they are fighting for privileges for the doctor, not for better medical care of the veteran. I am not running this medical service for doctors—I am running it for patients—and I know no other way of raising the standard of medical care of the veteran than to replace poor doctors with excellent doctors. You can't make an omelette without breaking some eggs.

I am fully aware that, in our haste to improve conditions, we have made mistakes. We may have displaced in the service, but not removed from the service, some doctors who were better than their records indicated. We are now correcting, and we shall continue to correct, such mistakes as rapidly as we discover them. But the hard fact is that we have made more mistakes in the other direction, by not removing some doctors who should be removed. And, let there be no mistake about this, if I must commit an injustice, I would much rather commit it against a doctor than against a patient.

The fact is that no physician in the Veterans Administration of even average qualifications has suffered from this reorganization. The great majority of them were advanced one grade when they were taken into the new Department of Medicine and Surgery. None was demoted. Many of the excellent men were advanced two grades. All these actions, however, were taken with only one thought in mind, the good of the veteran patient. Again I say, we are not operating this medical service for doctors, we are operating it for the patients. No doctor has a vested right in his position in the Veterans Administration. If the doctor's services are good for the veteran patient, there is nothing too good for the doctor.

If the doctor's services are not good for the veteran patient, there is no place in the Department of Medicine and Surgery for that doctor.

Some of the criticisms leveled at this program smack of the witch-hunting of the seventeenth century. These critics say that we are using veterans as guinea pigs, that we are experimenting on them in veterans' hospitals. *Nothing could be farther from the truth.* But the worst aspect of this criticism is that these misinformed critics are being furnished their information by certain disgruntled doctors of the old regime of the Veterans Administration. *These doctors know that they lie.* And the fact that they know they lie, and use these lies in an effort to destroy a program which offers more to the sick veteran than has ever been offered to him before, is a measure of the character of these men. If you want men of this character to take care of the veteran, I and a great number of other doctors will step down gladly and turn the program over to them.

I want to make it very plain that I am not indicting any great proportion of the older men in the Veterans Administration medical service. Many of these men have hoped and prayed for years for a program of this kind. Many of them are supporting it unselfishly. Some of the older men know that they can never qualify for the additional pay of specialists; but they realize, as I do, that new standards have grown up in medicine and that, if we are to improve this service, we must accept these standards and abide by them. The fact that they have passed the age where they themselves can enjoy this extra compensation has not soured them, and they are loyally supporting our efforts. We shall eventually identify the small group of malcontents who are trying to sabotage this program. There is no place in the Department of Medicine and Surgery for a doctor who places his own interests above the interests of the veteran patient.

The most absurd aspect of this ignorant criticism is that our program is exactly like that in the most famous hospitals and clinics in the United States. These are all teaching institutions. Here in your own state stands the first, the largest, and the most famous of all the great clinics of the world. It is a teaching institution. It trains resident physicians and surgeons, exactly as we are training them in veterans' hospitals. Its clientele is drawn from all economic and social classes, millionaires to paupers. And its millionaire patients are used in its teaching program just as are its pauper patients. While I know nothing of the policies of the Mayo Clinic, and certainly shall not presume to speak for it, I would venture the opinion that it would not consider staying in business without its teaching program.

The training program in veterans' hospitals is established for the same reason that the training program was established in the Mayo Clinic, that it was established in the Massachusetts General Hospital, that it was established in Johns Hopkins Hospital, and that it was established in every outstanding hospital in the United States. The reason is that the patient gets better care in a teaching hospital than he gets in a non-teaching hospital—his case is studied more thoroughly, and the staff members are constantly stimulated to higher standards. We have this program today in thirty-two of our 107 veterans' hospitals. The standard of patient care in these thirty-two hospitals is not to be compared to the standard of patient care in the other seventy-five. Here in the State of Minnesota is a veterans' hospital that compares favorably with any hospital in the world. Here is a hospital in which the veteran is assured of receiving absolutely first-class medical care, a hospital which he can enter with confidence. I ask you only one question: has this always been true of the Minneapolis Veterans Hospital? If and when I get sick, if and when I need a surgical operation, I shall go into one of our teaching hospitals. I would enter the Minneapolis Veterans Hospital as a patient without the slightest question in my mind but that I would get absolutely first-class care. I want no veteran to have to accept a lower standard of medical care than I would accept for myself; and I shall not be satisfied with any veterans' hospital until I am willing to enter that hospital as a patient myself.

I have spoken of new standards which have been introduced into medicine within the past fifteen years. These are the standards set up by the American Specialty Boards. I shall not bore you with a detailed technical description of the functions of these Boards, but a simple explanation will help you to understand the next point I wish to make.

Any licensed physican can call himself a specialist and practice any specialty in medicine, regardless of whether he knows anything about the specialty or not. I can go back to the State of Indiana tomorrow, where I am licensed to practice medicine, and set myself up as a specialist in diseases of the eye, although I have had no training whatsoever in diseases of the eye other than the little that was given to me thirty years ago in medical school, and that, I assure you, was not very much. However, if unsuspecting patients came to my office—and they would come in greater or lesser numbers—I could treat any of their eye diseases, I could operate upon them for cataract (which is a very delicate operation), I could operate upon children for crossed eyes. If my patients were blinded as a result of the treatment I gave them, it would just be their hard luck. My license to practice medicine permits me to undertake anything in the field of medicine and surgery.

Realizing this situation, a few well-trained specialists set about doing something to protect the public from incompetent and unscrupulous physicians who were practicing specialties without adequate skill. So now, each specialty of medicine has its own examining board to test the qualifications of physicians desiring to practice that specialty. These boards require from three to five years of intensive postgraduate training in the specialty before they will even admit a candidate for examination. Then they subject the candidate to a searching examination in that specialty. If he passes, the board issues a diploma to the physician, which testifies that he has had adequate training in his specialty. While this diploma has no standing in law, the patient is protected against quackery if he employs only specialists who are diplomates of their respective specialty boards. I must make it perfectly clear, however, that not all well-qualified specialists are diplomates of their specialty board. Some of the older men, who had been practicing a specialty for years before the boards came into being, never bothered to obtain certification. However, almost all of the younger men who are entering specialties make a serious effort to obtain their board diplomas.

You can understand how difficult it is to obtain such a diploma, and how much better trained, on the whole, these diplomates are. In the old regime of the Veterans Administration, there were only approximately sixty diplomates of American Specialty Boards in the medical service, and these were largely x-ray men and laboratory men. There were only a very few in the fields of internal medicine and surgery.

Since, January 3, 1946, on which date the President signed Public Law 293, we have employed full-time and placed on duty in the medical service of the Veterans Administration, 150 additional diplomates of American Specialty Boards—the cream of the profession, the *corps d'elite* of medicine. Never before could this service boast of such a large group of experts. We have more than doubled our number of expert specialists.

But this is not all. Among these men are many who have held positions of distinction in the world of medical education. I shall quote from only a few of their applications for appointment in the Department of Medicine and Surgery: professor of surgery, University of Illinois; assistant proessor of medicine, Johns Hopkins University; professor of clinical surgery, Women's Medical College of Philadelphia; assistant professor of medicine, University of Pennsylvania; assistant professor of surgery, University of Maryland; associate professor of medicine, Wayne University, and many more. I want to emphasize that these men are now full-time doctors in the Veterans Administration. In addition, we have several hundred diplomates of American Specialty Boards who are daily giving part-time service to the veteran.

How many men of this professional stature do you think would have come with us under the old regime? What is it that now attracts such able physicians to the Veterans Administration? It is just two things. First, they believe that this service is now free from politics and that they can practice real, honest medicine. And second, they desire the opportunities we have made for them to teach medicine. Most of the outstanding men in medicine love to teach, and 95 per cent of these outstanding men would never have considered the Veterans Administration as a career without the opportunity to teach and to train younger men.

Now, just what is the teaching program in veterans' hospitals? From the criticism leveled at us from certain sources, one would think that we were undertaking the training of first-year medical students. The fact is that our residents in training are all graduates of Class A schools of medicine, that they have completed their internships and that they are fully licensed to practice medicine. They are a standard of physicians that the Veterans Administration would have been extremely happy to employ in years past.

There are only two ways by which a doctor can perfect himself in a specialty of medicine. One is for the doctor to train himself—by trial and error. This may result in good training after some years of what amounts to experimentation on patients, but it is rather tough on patients until the doctor acquires some degree of competence. Many of the older doctors in the Veterans Administration trained themselves in this way, because there was no other way for them to get training.

The other way is for a doctor to work under the guidance and direction of an expert in the specialty—an expert who teaches him, who prevents him from making mistakes, and who does not permit him to touch a patient until it is evident that he is competent to undertake some small part of an operation. For three years he works under the direct supervision of the expert, and there is no experimentation upon patients with this method.

Which method do you prefer? Do you want to be cared for by the doctor who is teaching himself, or do you prefer the doctor whose every step is being supervised by an expert?

Thus, these resident physicians in training in veterans' hospitals are exactly the kind of doctors that the Veterans Administration would have been happy to have employed in times past. But what would have happened if they had been employed in years past? The majority of them would have been placed in full charge of the treatment of patients, with little or no supervision, and with little or no instruction. Many of them would have groped their way into the specialties of medicine. Today, these same young men work under the close supervision of highly qualified specialists. They are guided and trained. They are not permitted to make mistakes. Which of these systems do you think results in the better care of patients?

I am making no apologies for the new medical program of the Veterans Administration. No apologies are necessary. It has been given the enthusiastic approval of the leaders of American medicine. The only question is whether you want to believe medical men of national reputation or a few disgruntled doctors who have a purely selfish interest in jobs with the Veterans Administration.

Whether I remain in my position is of no importance. I accepted this position, and have remained thus far, at a very considerable financial sacrifice. The best thing that could happen to me personally would be that I am driven out of this position. I cannot, in conscience, resign so long as there is hope to give the veteran the best in American medicine, but I can always be fired.

I do hope, for the sake of the veteran, that there is never any return to the medical service of the past. Who operates this service is of no importance whatsoever. But *how* it is operated is of the most vital importance to the veteran.

AT LEAST, NOT YET

We think it was de la Rouchefoucauld who said, "There is always something in the misfortunes of our friends that does not quite displease us."

This morning, after we had brought ourself abreast of the latest developments in the labor situation; after we had mastered our nausea over the statistics of lowered production, decreased exports, et cetera, that would result, we turned to foreign news in the hope of finding something cheerful.

In no time at all we came upon this gem:

London, November 30. (UP)—Sixty-four doctors and nurses—the entire medical staffs of two London hospitals—have received dismissal notices for refusing to obey an order of the Willesden Borough Council to join a trade union, it was disclosed today. The Council's action leaves only one doctor, the medical superintendent, to care for 100 patients at Willesden Maternity Hospital.

Socialized Medicine! The closed shop applied to doctors. We are a little vague as to what the Borough Council of Willesden is, but somehow we feel a little safer with our mothers and babies in the hands of medical men selected by Boards of Trustees. We are glad we don't have to join a union if we don't want to.

Oh, and by the way, what happens to the mothers and the babies? The Council bent on asserting its authority seems as indifferent to their fate as Mr. Lewis was to the general suffering he was causing.—New York J. Med., Feb. 15, 1947.

VOLUNTARY PREPAYMENT MEDICAL CARE AND ITS RURAL ASPECTS

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IN this presentation I shall use the expression "medical care" to mean those services which usually are represented in the doctor's bill. Medical care, then, is distinct from hospital care.

Voluntary prepayment medical care dates back to 1882 but its expansion is relatively recent. This expansion began in Washington and Oregon shortly after World War I as an effort designed to overcome some of the undesirable features which existed in contract practice. Little was done elsewhere during the next ten years. With the depression came interest in ways and means of assisting people in what we then called the "low-income" or "borderline" groups of the population. In order to assist people of these groups, experiments were carried on with many plans. State medical associations, county medical societies, the Farm Security Administration (now the Farmers Home Admistration) and others studied and experimented with prepayment and postpayment ideas.

Prepayment plans today can be divided into three groups: service plans, indemnity plans and a combination of the two. In the service plans the fee or rate paid by the organization to the physician constitutes the entire amount which either the organization or the patient will be required to pay for the service. This was the general pattern of the early plans and of those born of the depression.

In the indemnity plans, the patient is paid a prearranged amount for specified medical services or care. The patient is responsible for paying the physician. The physician charges the patient according to his own fee schedule. The charged fee may be more or less than the amount paid by the organization to the patient and is generally determined by the physician on the basis of the patient's ability to pay. Up to the present time, the indemnity plan usually has not been the pattern preferred by physicians but sometimes is the only avenue open in forming an organization.

In the third type of plan, the patient whose income is below a certain level receives service benefits and the patient whose income is above this level receives indemnity benefits. Usually these levels are set at $1,000 to $2,000 a year for single persons and at $2,000 to $3,000 for families. This is probably the most popular plan today.

The movement toward prepayment plans actually received its first real impetus as a result of the achievement of the Blue Cross Hospital Service Plans. With both hospitals and patients in dire need of some sort of program to ease the burden of costs of expensive hospitalization, these plans spread quickly.

With the prepayment plans for hospital charges as guides, a number of state medical associations undertook to develop plans for medical care. The first state-wide plan to be put into operation was California Physicians' Service. This was followed within a year by Michigan Medical Service. These two plans, together with the county medical society bureaus of Washington and Oregon, gave the medical profession the necessary basis on which to build what has now become a nation-wide movement.

Growth

Counting Oregon and Washington plans as two state-wide plans, the growth of prepayment plans for medical care since 1939 has almost paralleled that of the hospital plans. It took Blue Cross between five and six years to place thirty-eight plans in operation. This compares favorably with the six years it took to develop thirty-seven plans for medical care. The same comparison also can be made with reference to enrollment. In medical plans, 2,845,000 subscribers were enrolled from 1929 to 1946. In Blue Cross plans, 2,870,000 subscribers were enrolled from 1932 to 1939.

In some ways, the achievements of the medical profession in developing its own prepayment program are remarkable. The problems involved in the payment and handling of claims for medical services are far more difficult than those for hospitalization. It took years of experimenting and compromising to work out solutions, but the progress made to date offers its own proof that advancement has been made.

Read at the annual Delegate Meeting of the Minnesota Farm Bureau Federation at the Lowry Hotel, Saint Paul, January 13, 1947.

An organization to pay for hospital care deals with relatively few institutions. A plan designed to pay for medical care deals with hundreds, or even thousands, of physicians. Physicians are anything but institutions. They are individuals and, as a practical administrative matter, a plan for medical care must not depend on a relatively uniform institutional point of view but on a host of individual attitudes, if the principles of the private practice of medicine and high quality of medical care are to be retained.

The latest figures show that eighty-four prepayment plans for medical care have been approved or sponsored by medical societies and the Blue Cross. Organizations are now in operation in thirty-three states, and, in addition, are being formed in thirteen states and the District of Columbia. In only two states is no plan for prepayment for medical care in process of development.

From some sources you may hear that the principle of voluntary prepayment has failed, that prepayment plans have not measured up to the demand of the public. These are unwarranted claims. The fact that not one of the prepayment plans developed by medical societies has failed since 1939, plus the fact that only two states remain in status quo, attests to the fact that efforts sponsored by organized medicine thus far have not failed. However, there is still much to be done.

Method of Expansion

Here are two avenues for expansion in the program for prepayment for medical care. The first refers to benefits (in the form of services, indemnities or both) that can be offered in view of fees paid and premiums charged. The second refers to subscribers and to enrollment.

Let us consider each of these avenues separately for a few moments. The expansion of benefits is limited partly by insurance principles; that is, by the amount of the premium, dues, or whatever the income is called, that can be collected. In other words, the benefits cannot exceed what the public will or can pay for.

In the early plans in use in Washington and Oregon, these benefits included practically all medical services: surgery, home and office calls, and even limited nursing and dental care. Through the years since these plans were inaugurated, this broad coverage has been continued. The plans organized in 1939 and 1940 followed this lead and also provided for reasonably complete medical care. In contrast, in later plans full coverage has been demonstrated to be unsatisfactory. It was found that the public would not or could not pay the premiums necessary to carry such a broad contract. Wherever a contract for surgical care and a contract for general medical care were offered, the ratio of enrollment was more than 100 to 1 in favor of the surgical program. As a result, the plans generally have preferred to begin by offering fairly restricted coverage, including such items as surgical care, obstetrical care, x-ray charges, and fees for anesthesia, all applying only if the patient is hospitalized. Then, as experience was obtained, benefits were added. The latest development has been the addition of medical service in the hospital. Now most of the services necessary in cases so severe as to require hospitalization are covered.

The tendency to limit services to those accorded in the hospital is a natural one. In the first place, most of the costly illnesses are those that require hospitalization for the patient. Second, there is likely to be little abuse of such services. Third, actuarial experience with relation to hospitalized patients is sufficient to provide more certain bases for determining adequate premiums or rates than are available with respect to patients seen in their homes or at offices of physicians. A recent study of fifty-one plans for medical service shows that thirty-four offer surgical, obstetrical and specified medical services in the hospital. This same study shows that under some plans benefits are continuing to expand. In twelve of the plans, provision is made for general medical care such as home and office calls and, in five, almost complete coverage is provided.

The average monthly premium for a single subscriber is approximately $1.25 and ranges from as little as 60 cents to $4.85. Family coverage ranges from $1.35 to $10 a month, with an average of about $3.

Organizations are still experimenting with benefits and with premium rates. As in one organization success is attained with some new idea, it is made available to other organizations. The same, of course, is true of failures. In this manner, expansion or retrenchment will continue as actual experience and public demand dictate.

Here in Minnesota it is expected to offer, at the outset, something about midway on the scale just described. By this I mean that it is intended to offer more to the subscribers than just surgical care or medical care while in hospital but less than full coverage. The contract as finally agreed upon probably will provide for limited general medical care (home and office calls) and certain special medical services.

This is the intention because it is believed that our need in Minnesota is somewhat different from that in the highly urban areas where most plans have started. In our state, about 50 per cent of the people live on farms or in small towns and villages. It is necessary to offer these people a contract under which they will be provided with reasonably adequate medical services. Experiments in rural areas have, of course, shown that the rate of utilization is higher than in cities. The financial risk is greater. Where workers are not covered by workmen's compensation insurance, all injuries and illnesses automatically come within the scope of a prepayment plan.

The success of a plan under which general medical coverage is offered depends on two things, namely, control of abuses and adequacy of premiums. Abuses may be perpetrated by the physician or the subscriber. It is the duty of the medical profession to keep its own members in line. So, too, it is the duty of enrolling groups, whether they are drawn from factories, farms, or towns and cities, to keep tab on their members. The same sort of fifty-fifty responsibility plays a part in determining premiums. What can the subscribers pay; what must be charged if the organization is to remain financially sound? I have mentioned that before, and have given some figures. I mention it here again because it has an obvious bearing on what I propose to take up next, namely, the second of the two avenues for expansion and what its limitations are.

Expansion of the program of prepayment for medical care is limited then partly by the ability and willingness of the public to enroll as subscribers. Most of the plans have been applied in urban areas where large enrollment was possible. This was a sound method because the sooner an organization obtains adequate spread of its risks, the sooner it can expand its program of benefits and enrollment. Large enrollment provides this spread much more easily and quickly than small enrollment. Not only this, but the cost per subscriber is lower if enrollment is large than if it is small.

The pattern is now changing. Nearly every organization which has reached reasonable enrollment and a sound financial level is turning to ways and means of reaching all groups of the population, particularly rural groups.

In general, the pattern has been to deal with the farm group not as a separate entity but to include it in what is called "community" enrollment. In community enrollment, the farmer is included with the residents of a city, town or village near which he lives. Usually the town is a center for banking, a source of supplies and so forth. The whole community then composes the group, and premiums are payable at a central place.

A successful Blue Cross enrollment campaign in rural areas was carried out by the Weld County, Colorado, Agricultural Health Association. Enrollment was on a community basis, reaching all elements of the community as a civic service. Weld County, the largest county in Colorado, is about three times the size of Rhode Island and boasts a population of 63,700. Greeley, with 15,900 residents, is the largest city in the county. There are several smaller towns, the largest of which has a population of 1,800. Prominent businessmen, leaders of farm organizations and various club leaders met with Blue Cross representatives and decided to form a health association under the Colorado law governing co-operatives. Twelve directors, each representing a definite district in Weld County, govern the health association. This division provided units that were workable as to area and population for an enrollment and administrative program. Enrollment was not limited to Blue Cross but each district was allowed to enroll separately in the Colorado Medical Service plan whenever 50 per cent or more of the families in the district had subscribed to the health association and to Blue Cross. Experience demonstrated the value of a paid secretary, to work full-time with the voluntary committees; also to keep the records and to handle the billing. The secretary's salary and other necessary expenses were financed by an annual charge of $1.00 per year assessed against each member who was more than eighteen years of age. To date, Weld County has 8,000 enrolled. In Colorado, ten similar county health associations have been organized, and one of every six persons in rural areas and one of every two urban residents have been enrolled.

In Iowa, fifty-five similar county health improvement associations have been organized. In other states enrollment on a similar community basis is taking place although organization is less formal.

Although the foregoing does not apply solely to medical plans, voluntary prepayment medical plans are making rapid progress in rural areas. The problem cannot be solved on a national level. It must be worked out in the community where the need exists. Everyone in the community must lend support if any effort is to succeed.

Continuing improvements in transportation will accelerate the growing tendency of rural people to bring the patient to the physician. Thus, physician's care and other health facilities can be extended over an area that will include a sufficient number of people to meet the costs of the services provided.

The fees for medical services rendered by rural practitioners are not excessive. However, there are times when illness strikes and the severity of the case cannot be predetermined. For this reason, many farm families faced with severe illness find it difficult to meet the full costs when illness does strike. This problem is basically the same as it is with people living in towns.

Medical Care for All

The medical profession has felt that it has done well to charge for its services on the basis of the patient's ability to pay, charging nothing at all in many instances and thus excluding nobody from medical care. But this method is not agreeable to everybody concerned nor is it certain that it will prove sound in a future of unknown stresses. The only sound method so far devised to provide medical care for everybody in a free society is through use of the insurance principle. Prepayment plans for medical care available to all people of a community, townspeople and farmers alike, tend to spread the risk and distribute the costs. Thus, having the cost known in advance, proper planning and budgeting for the otherwise unpredictable costs of illness are possible.

Physicians, because of their special training, will bear the responsibility for the professional aspects of the program. They also will see to it that fees are not higher than they should be. The recipients of medical service cannot escape the responsibility of paying the cost of the services. Both parties to the contract should do their full share in providing the needed facilities.

For ten years or more physicians have operated organizations under pilot plans for insurance against the costs of medical care. From this experience they now feel that they should recommend prepayment plans. Thus, the American Medical Association enters the picture. This association is not a superior authority which issues orders to its state and county units. It is the recipient of, and gives expression to, decisions reached in the county and state units. These units have caused to be formed a Council on Medical Service of the American Medical Association and one of its chief functions is to help in the development of prepayment plans in various communities. The state medical associations and the American Medical Association have rural health committees devoting their attention to the rural problem.

As has been said, physicians are co-operating in local efforts and also are making available prepayment plans of medical societies so that everyone interested may have an opportunity to insure himself against medical expense. Local representatives of farm organizations, business groups and local medical societies working in full co-operation and understanding are now in a position to work out the difficult economic problem of delivering medical care to all the people.

A Qualification

In closing, may I say that the assignment to discuss this subject was accepted with full realization of the vastness of the problem.

At the height of ancient Greek culture, there were said to be only seven philosophers who knew the truth; everyone else was ignorant. Today many of us believe that we alone know the truth. How many are there who, like Socrates, will admit that all they know is that they know nothing?

Aristotle remarked that everybody contributes something to the truth but no one person can apprehend it by himself. No mortal is ever entirely right.

THE TREATMENT OF PERSONS WHO HAVE BRONCHIAL ASTHMA

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ASTHMA is a Greek word which means shortness of breath, or panting. In English it has come to mean severe dyspnea, which may occur in a variety of conditions. We speak of bronchial asthma and of cardiac asthma, but used in this way it is merely the name of a symptom.

The word is quite generally used to denote bronchial asthma alone, that is to represent the definite clinical complex exhibited by certain patients who between periodic attacks of wheezy dyspnea are to a large degree subjectively and objectively well. Even used in this sense it is not really the name of a disease. While ordinarily the symptom complex can be recognized without too much difficulty, the diagnosis of its exciting cause and the underlying constitutional basis should also be made.

A patient suffering from an attack of bronchial asthma is having a form of shock, somewhat similar to the anaphylactic shock which occurs in experimentally sensitized animals. Admitting the occurrence of such paroxysms on a nonallergic basis and of their development without previous protein sensitization or exposure to allergens other than bacteria within the patient's own body, it is still generally agreed that bronchial asthma in most cases is a clinical manifestation of an allergic diathesis which the patient has had since birth and which he has inherited.

Adequate diagnosis requires not only that the character of the paroxysm be recognized, and if possible the exact nature of its exciting cause, but for successful treatment it must be constantly kept in mind that there is also present an underlying constitutional state.

In no condition is it more necessary that the physician who hopes to benefit his patient permanently become thoroughly acquainted with him as an individual, know his antecedents and continue in close touch with him throughout his entire life.

Persons who have bronchial asthma are thus different from other people. They nearly all belong to a definitely allergic group which is said to comprise from 10 to 15 per cent of our population, and for the most part they are born with a predisposition to develop asthma or some form of allergy.

That the tendency to become sensitized is transmitted according to the Mendelian law as a dominant characteristic was shown by Cooke and Vanderveer in 1916.

Asthma may be more or less of a handicap in accordance with the frequency and severity of the paroxysms as they occur at intervals during a longer or shorter life. The patient's titre or measure of sensitiveness to this particular allergen or *bete noir* varies in different individuals and is not always at the same level in the same individual. There are many predisposing causes which may lower it, and it is well worth the patient's and physician's time to seek them out and avoid them. It is the tendency, not the specific sensitivity, that is inherited. Persons inheriting such a tendency are handicapped as truly as those who have lost an eye or a limb. The main underlying cause of asthmatic seizures is this bad family history. It is peculiarily unfortunate if both father and mother are asthmatic or even allergic to the extent of being sufferers from hay fever or other definite manifestations of allergy. A child born in such a family needs special watchfulness on the part of his parents and his doctor. The acquirement of an inferiority complex is an incidental handicap which awaits many such children, even if they do not develop allergic symptoms.

Many superficial observers will feel that most asthmatics are neurotics and will look for a psychoneurosis to explain their sufferings, but scientific analysis has never been able to prove that asthma is a neurotic or hysterical reaction.

A mental element was suspected in the case of one of our patients who had been driven by her distress to long journeys and strange behavior. Meanwhile, her children had to travel with her, and their surroundings and experiences were not those included in a child's bill of rights.

This young woman, in 1936 before her marriage, when twenty-two years of age, was doing housework in Minneapolis and contracted a severe cold. Since then she has had asthma more or less continuously. Meanwhile she married and she has had three children. She was in several states and various hospitals while her husband

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Read before the medical staff of St. Mary's Hospital, Duluth, Minnesota, October 3, 1946.

was in the army. Though a resident of Stearns county, Minnesota, she came to Duluth in 1944 and expected to remain here indefinitely on account of the climate. She has had skin tests and was found to be allergic to feathers, dander and certain foods, and was given various treatments, including sinus surgery and removal of nasal polyps, but when she arrived here she was thoroughly convinced that climate and intravenous injections of aminophyllin were the only things that could help her. In fact, she was addicted to the intravenous use of aminophyllin. Admitted to St. Mary's Hospital on July 22, 1944, she received intravenous injections of aminophyllin at frequent intervals, sometimes several times a day. She remained in the hospital nearly two months, getting various other medicines and treatments as well. Among them was potassium iodide.

On November 19, 1944, when she consulted the Duluth Clinic, she was the picture of distress. This appearance was accentuated by an extensive acne of her face, and she again received temporary relief through an intravenous injection of aminophyllin. Later the same night she appeared at the emergency room at St. Mary's Hospital and asked for another intravenous injection. This sort of thing continued for several days and nights and kept the interns busy, until four days later she was admitted following an early morning emergency injection of aminophyllin. She had received fifty-nine such injections in the previous six weeks. In the hospital she received more aminophyllin injections. The paroxysms of dyspnea, for which she sought relief were likely to occur at most inconvenient times, often when the nurses were busy with meals and interns were difficult to secure. She seemed such a difficult and unreasonable patient that she was transferred to the psychopathic ward, but the psychiatrist who was consulted reported that her actions and deportment were typical of one suffering from a chronic medical condition and were due to introspection, anxiety about herself and her problems, rather than any psychosis.

She was then removed to another ward and the situation was explained to her as well as could be. There she received intelligent and tactful care from the interns and nurses and was asked to co-operate as far as possible. Gradually she became less apprehensive, and acquired some faith in intramuscular and rectal injections of aminophyllin, and before discharge was relieved by adrenalin. Later when she was admitted to St. Luke's Hospital in a temporary panic, the same program was followed. After a two-weeks stay she was transferred with her children to St. Cloud in an automobile, attended by a nurse. During the trip she was entirely free from symptoms. A year later the Stearns County Welfare Board reported that she and her children had left some time previously for the Southwest, either to join her husband or to search for a better climate. That there was an anxious mental state which added to her difficulties seems apparent. If she had been endowed with a different temperament her treatment would perhaps have been simpler. A great deal of her distress was certainly from apprehension.

We had another patient whose dominant idea was that he could not exist without oxygen. After hundreds of dollars had been spent for its constant and continuous use in St. Luke's and Miller Hospitals, since he evidently was a very sick man, the intern and the medical and nursing staff finally succeeded in weaning him from his dependence on it without doing him harm.

The other members of the family of one of our patients were thoroughly convinced that their mother's asthmatic attacks were largely nervous in origin and that she could avoid them by using her will power. This attitude on their part made her lot especially difficult and unhappy. She was undoubtedly neurotic. However, her neurosis did not cause her asthma, but on the contrary, was to a large extent caused by it.

Worries about financial and family affairs may also seriously depress the patient's threshold to allergic reaction. Marital difficulties have been complicating and unsolved problems in several of our cases. While the avoidance of mental disturbance is necessary in the treatment of the asthmatic, the maintenance of the best possible conditions for general bodily health is equally as important.

This has recently been emphasized by Dr. Francis M. Rackeman. Depletion of vitaliy can only lower the patient's threshold to reaction and make it possible for his latent or subclinical allergy to express itself. There is a group of patients consisting mostly of children and young adults who have asthma in isolated attacks, each attack following a new cold. Such attacks may sometimes be brought on by simple fatigue. In such cases, besides the avoidance of known allergens, improvement of the general health of the patient is most important. Better hygiene regulation of his daily life, the time and quality of meals and daily activities, the institution of adequate periods of rest, fresh air and exercise, the use of extra vitamins and vaccines, are all helpful measures.

Some allergic persons living a well-regulated life are not much handicapped by asthmatic attacks. One of our patients was a boy of seventeen who had asthma for several years. He developed a severe attack on October 12, 1944, and was admitted to St. Mary's Hospital where he secured relief from adrenalin. He was quite thoroughly studied and found to have sinusitis and to be quite sensitive to various dusts, but not to foods. No surgery or change of climate was advised nor was his school work interrupted. He was simply asked to secure nine hours sleep if possible and to follow a slightly limited regime. He also took an oral cold vaccine. Careful hygiene, rather than the vaccine, was probably responsible for the fact that he had no colds during the following winter. Early in the summer of 1945, although he was frank in telling of his asthmatic history, he was accepted by the navy. In June of 1946 his mother reported that he had been in the navy a year, part of the time being spent at the Great Lakes Training Center in Illinois and part of the year in New Orleans, but that he had had no recurrence of asthma.

It will often be found that an asthmatic paroxysm has been preceded by a period of poor general health during which the patient has been below par. He may have had pneumonia, or an operation or just an upper respiratory infection. Often enough he has gone through a serious emotional experience and as a result has lost appetite and sleep. He needs an "ordered life" without "strain or stress" to keep the threshold of his sensitivity low enough to prevent the occurence of explosive reactions. "Debility" and "depletion," to use Dr. Rackman's terms, often cause them.

Getting acquainted with an asthmatic patient involves very careful history-taking to bring out underlying accessory causes which precipitate distressing episodes. Experience has shown, according to Unger, that in almost every severe case of asthma someone has been neglectful. The physician is not consulted often or retained to be a life counselor or guide to his patient, who muddles along or is neglected by his parents and friends until a violent reaction occurs, at which time they cry vociferously for help.

Hospitalization for a short time is often a wise measure since it changes the patient's environment, aids in the more exact determination of his susceptibilities, and raises his reactive threshold to offending allergens. Unless fundamental study and care is given, the patient is readmitted again and again, or else remains at the hospital for an indefinite period. One Duluth patient remained hospitalized for more than a year; another has been admitted nine times in the past two years to the same hospital.

Whatever the offending allergen may be that precipitates the asthmatic attack, the explosive reaction that occurs is substantially of the same nature in each case.

There is practical agreement that asthma patients have, in the mucous membrane lining the bronchial tubes, sensitized cells containing antibodies that are specific for certain allergens. When the specific allergen comes in contact with these antibodies in the sensitized cells in the bronchial mucosa, whether it reaches them through the inhalation of air containing it or by way of the blood stream, the reaction occurs. The severity of the reaction depends on the degree of sensitivity of the cells and the amount and character of the allergen. The bronchi containing the sensitized cells are the trigger area, and their degree of sensitivity may be so great that the most trifling circumstances, given any exposure to the antigen, may cause the explosion, even in some cases the passage from a sun-warmed area into the shadow.

As in anaphylactic shock there is narrowing of the lumen of the bronchial tubes by the outpouring of mucous which partially fills them, and probably also by muscle spasm in the smaller bronchi. The patient becomes more or less short of breath, begins to wheeze, and has a moderate amount of cough and expectoration. In more severe attacks the dyspnea becomes extreme and all the accessory muscles of respiration are brought into play. Tachycardia and sweating occur. The individual is utterly miserable, just as he has been before and is in many cases destine to be again and again.

As in surgical shock, a toxic histamine-like substance is believed to be set free which initiates the profound local and systemic reaction. The distribution of the blood is altered and its control changed. Internal secretions, especially adrenalin, are called into the circulation and various biochemical changes promptly occur, including increase in the hydrogen ion concentration, all of which have their effect on the control centers in the medulla. Fear and emotional shock are accompanied by somewhat similar phenomena.

The purpose of the emergency treatment of asthma is to interfere with the mechanisms producing shock and to lessen its severity.

The diagnosis is usually not difficult and in most cases has already been made. The wheezy dyspnea is characteristic, the long history of recurring paroxysm with no evidence of disease between the attacks makes confusion with the dyspnea of heart disease or pneumonia unlikely. However, as has been said, "All is not asthma that wheezes," and laryngeal affections, extrinsic and intrinsic lesions of the trachea and bronchi, foreign bodies, diseases of the heart and lungs, Loeffler's syndrome and functional air hunger all have to be considered.

The following summary has been prepared for me by Sister Loretta and the record librarians at St. Mary's Hospital in Duluth. It is concerned with admissions to that hospital in 1944 and 1945. Nearly every general practitioner and internist on the staff was represented among the thirty-eight physicians in charge of the patients.

As a rule, the procedures used to control the patient's paroxysms and relieve his distress were the usual well-recognized or recently publicized methods, which it may be worth while to review here.

ASTHMA GROUP STUDY, ST. MARY'S HOSPITAL
DULUTH, MINNESOTA
1944-1945

Total Cases	
1944	70
1945	56
	126

	Per Cent
Age:	
Under 10	31.7
10-20	9.5
20-30	3.2
30-40	13.5
40-50	7.1
50-60	11.9
60-70	15.8
70 plus	15.8
Sex:	
Male	57.1
Female	42.9
Duration:	
First attack	23.0
More than one attack	69.0
Not mentioned	7.9
Exciting Cause:	
Pollen	6.3
Seasons	18.2
Feathers	3.2
Dander	3.2
Food	10.3
House dust	3.9
Excitement	3.2
Cough	50.7
Cold air	5.5
History of Other Allergies:	
Eczema	12.7
Hives	3.2
Hay Fever	8.7
Dermatitis	2.3
No allergy	5.5
Not mentioned	61.1
Eosinophilia:	
3% plus	10.3
4% plus	5.5
5% plus	2.3
6% plus	19.0
	37.1
No eosinophilia	26.1
Not mentioned	34.9
Treatment Used:	
Adrenalin	58.7
Ephedrine	32.5
Phenobarbital	32.6
Morphine sulphate	11.9
Various sedatives	39.6
Aminophyllin	46.0
Oxygen	19.0
X-ray therapy	24.6
Hot packs	11.9
Steam	27.7
Radiant heat	3.9
Sulfa drugs	26.9
Penicillin	8.7
Histamine	8.7
Sat. Sol. KI	8.7
Cough mixture	34.1
Results:	
Improved	99.2
Died	.79

The purpose of the emergency hospital treatment of asthma is, as has been stated, to interfere with the mechanism producing the shock and to lessen its severity. A number of medicines and measures have been proved to be helpful for this purpose in Duluth as elsewhere.

Adrenalin.—The most commonly used and most effective medical treatment of the paroxysm is the subcutaneous or intramusclar injection of adrenalin. A dose of .35 c.c. of a 1:1000 solution in normal saline may control the attack for a time varying from minutes to hours and often is as effective as a larger dose. The smaller dose can be repeated at half hour intervals if necessary. Adrenalin is of no value given orally and is rarely used intravenously. It must be used with some caution in those with hypertension and heart disease. If the usual saline solution is not effective, adrenalin may be given as a 1:500 suspension in peanut oil by intramuscular injection, in which case its action is somewhat slower and more prolonged. The inhalation of a still stronger watery solution, 1:100, from a special nebulizer, helps many patients. Some chronic asthmatics require or demand as many as ten or more injections of adrenalin in one day. The relief obtained by a single injection may in other cases last for weeks or months.

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adrenalin in one day. The relief obtained by a single injection may in other cases last for weeks or months.

After a time, especially in the severe and protracted cases, the patient may become adrenalin-fast, a condition which however is usually not permanent.

When the patient's sensitivity to his allergen remains low and his attacks are mild, they may be relieved by the use of ephedrine, a drug whose effect is similar to that of adrenalin. It has the advantage that it may be given by mouth. There are a dozen or more preparations, each highly recommended by the manufacturer as effective in asthma, which consist of ephedrine combined with phenobarbital aminophylin or other substance. The patient may take such tablets three times a day or when needed to control an attack. If his attacks come in the night, he may take an enteric-coated tablet in the evening which becomes effective some hours after it is taken. Several of our patients have found the occasional or continued use of such tablets, together with hygienic measures, all that was required to keep them fairly comfortable for long periods.

Adrenalin was used in the treatment of nearly every asthmatic patient admitted to St. Mary's Hospital in Duluth in 1944-1945. Ephedrine, usually in combination with phenobarbital, was a supplementary medication routinely prescribed.

Aminophyllin.—When patients cease to be relieved by simple medication or by the use of adrenalin, it becomes necessary to employ other means to lessen or banish their distress. Theophyllin ethylenediamine, or aminophyllin, as it is commonly termed, is a valuable synthetic xanthine derivative. Used intravenously it promotes prompt relief in most cases. It must be given slowly to avoid causing syncope. In order that it may be injected slowly it is nearly always given in a considerable amount of saline solution. The usual dose is 0.48 gm. (7½ gr.) in 20 c.c. of normal saline solution. Sometimes 0.24 gm. (3¾ gr.) in 10 c.c. of normal saline solution is sufficient to give relief. Aminophyllin is said to act by inhibiting bronchospasm through direct action on the bronchial musculature, while adrenalin stimulates the sympathetic nerve fibres in the bronchi causing shrinking of the bronchial mucosa through vasoconstriction of the arterioles, at the same time producing bronchial dilatation through relaxation of the bronchial muscles.

Aminophyllin given orally has not proved very effective in relieving asthmatic attacks. It has sometimes been given intramuscularly with satisfactory results in 0.48 gm. (7½ gr.) doses which are furnished in 2 c.c. ampules.

It is sometimes effective in rectal injections, 0.48 gm. (7½ gr.) being administered in 20 c.c. of distilled water as a retention enema, or it may be given in a suppository containing 0.36 gm. (5½ gr.).

Since intravenous injections cannot be administered by the patient himself or very frequently at home by his physician, the patient requiring aminophyllin should ordinarily be hospitalized.

Aminophyllin finds its greatest field of usefulness in patients who temporarily are not relieved by adrenalin, and according to the Council of Pharmacy and Chemistry the American Medical Association[3] it is probably a safer drug than adrenalin in the occasional cases where there may be indecision regarding the "bronchial" or "cardiac" nature of the attacks. Intramuscular and rectal administration should be used more frequently than they have been.

Oxygen.—Oxygen, or oxygen with helium, is frequently administered to relieve distress from asthmatic seizures. In some cases immediate relief is secured.

Forty per cent oxygen at the rate of 4 to 6 litres a minute is the usual prescription. Continous oxygen is occasionally required, or seems to be, for considerable periods, as already mentioned. A mixture of helium and oxygen in the proportion of 80 per cent helium and 20 per cent oxygen offers the advantage that, inasmuch as the mixture has only about one-third of the weight of air, it is breathed more easily. Following the use of oxygen, patients who have become refactory to adrenalin may again be able to get relief from it.

Two ounces of ether with four ounces of olive oil per rectum is effective in securing relaxation for some patients. Occasionally general anesthesia has been employed with benefit.

X-Ray Therapy.—Schilling[10] in 1906 noticed that an asthmatic patient felt better after fluoroscopy, and various observers have since recorded improvement after x-ray treatment. Desjardins[5] has explained the benefit as due to the action of the x-rays in producing a decrease in the secretory power of mucous glands, a liberation of antibodies by the destruction of leukocytes and a stimulation in the production of eosinophiles.

However, although forty years have passed since Schilling's report, x-ray treatments have not yet been proven of extraordinary value for relieving or preventing asthmatic attacks. Whatever beneficial effect they may have does not seem to be lasting.

Enough has been said to indicate that the hospital treatment of bronchial asthma has usually meant rather desperate attempts on the part of the attending physician to meet an emergency to relieve a patient in dire distress, to treat a symptom without getting rid of its cause.

Morphine.—The administration of morphine is mentioned only to be condemned. Although the patient gets relief, sudden death is not uncommon following its administration. It is especially dangerous when used as a last resort. It probably causes death by depressing the cough reflex and the respiratory center. When it does not cause death directly, its use is likely to be followed by nausea and vomiting which definitely increase the mortality. Some allergic individuals, moreover, are hypersensitive to morphine itself, and frequently it causes pruritis, if no more serious result. It is not denied that in some cases morphine relieves when other measures have failed, but too often it quiets the patient permanently. Unger[11] reports five fatalities following the use of morphine to control asthmatic seizures, in 1926, 1928 and 1929.

Since abandoning its employment, only two deaths from asthma have occurred in his practice. As a matter of fact, except when morphine is used, deaths rarely occur during asthmatic seizures or in status asthmaticus. Often the patient wishes he could die but doesn't.

More than 10 per cent of the asthmatic patients at St. Mary's Hospital in 1944 and 1945 received morphine. Fortunately there was only one death in this series and that was not following its use.

Demerol, an opium derivative, in spite of Paul de Kruif's recent panegyric in the *Reader's Digest*[4] over its use in asthma, as God's own medicine, has not been found very useful or very safe.

Various other sedatives and hynotics are often helpful. Phenobarbital, seconal, amytal, or nembutal may be tried, but they may do harm if pushed to the point where the patient's ability to expectorate is lessened. One must be on guard for idiosyncrasies.

Most asthmatics endure necessary surgical operations fairly well. It is easier and safer to operate between the attacks, but when delay would be dangerous, it has often been found that the anesthesia brings on relaxation and long-continued relief. Morphine should not be given in the preparation of the patient. Substitutes such as the barbiturates (nembutal, amytal, and phenobarbital) should be employed instead. Aspirin should not be given, unless it has been ascertained that the patient is not hypersensitive. One of our patients had a nearly fatal shock after being given 5 grains. Still it was not infrequently ordered in the series.

Febrile diseases are not especially influenced by the presence of asthma, and during their course the patient may have temporary relief from his attacks. This was true in one of our cases, an old lady, who, while having frequent asthmatic seizures, developed bronchopneumonia for which she was hospitalized. During its course she was free from asthma, but it recurred following her convalescence. Did her fever act as a form of therapy? On the other hand, head colds and sore throats often precipitate asthmatic attacks.

Specific Treatment.—Separation of the patient from exposure to the allergen for which he has acquired a greater or less degree of sensitivity is a form of specific treatment. Sometimes the offending substance is already known to the patient; hence, the value of careful history taking. Removal of the patient from his home to the hospital may shed light on the subject. If the attacks cease, the allergen may be absent in the new environment.

If not known or discoverable in this way, valuable leads may be given by careful skin testing, though often enough some of the substances to which the patient responds by positive reactions are not the one which produce his symptoms. He may react positively to substances with which he rarely comes in contact, or of which he encounters such small amounts that this threshold of sufficient susceptibility to permit an attack is not reached. His sensitivity to some other substance may be the one that really causes the trouble.

Satisfactory skin testing requires skill and experience and judgment. The tests may be on the patient's skin, or if for any reason, such as the presence of skin eruptions or a general condition of debility or depletion, this is not practicable, they may be done on the skin or another person who, however, must not be an allergic individual himself. This indirect form of testing is based on the Prausnitz-Kustner[10] phenomenon, in accordance with which the patient's sensitivities can be transferred to a limited area of the skin of another individual by preliminary injections into it of the patient's serum.

Whether the direct or indirect methods of testing are chosen, care must be used to avoid overdosage, as severe constitutional reactions and even fatalities have resulted in some cases. The patient who is being tested should remain in the physician's office long enough for untoward symptoms to develop, and restoratives should always be at hand in case syncope occurs.

The tests are performed in various ways—on the skin by simple contact or patch methods, and in the skin by the scratch or by intracutaneous procedures. They are time consuming and should be directed and observed by one thoroughly familiar with them, preferably a trained allergist.

When the substance or substances to which the patient is sensitive and which appear to be responsible for his asthmatic attacks are identified, breaking of contact with them is sometimes quite simple. Food allergens may be omitted from the diet. The face powder may be changed if it is responsible. Contact with animal dander may cease when the dog or cat is banished. Offending pollens may be avoided by moving to a place where they do not exist, or are not sufficiently abundant to overcome the patient's modicum of resistance, as in the hay fever havens of America where the breezes blow them away. If one must stay where there are pollens to which he is supersensitive, air filters and air conditioning may help to keep them out of a room.

If considerable contact is unavoidable, desensitization may be tried. Perhaps hyposensitization is a better term since complete and permanent desensitization is rarely possible. The best that can usually be hoped for is a reduction of the patient's sensitivity.

This form of treatment may be given orally in case the allergens which distress the patient are foods. If they are pollens or bacteria, a series of hypodermic injections of extracts or suspensions is used.

Dosages, solutions and time intervals differ somewhat in various hands. The principle is the same that underlies immunization to tuberculin by Dr. Trudeau's method. Very minute doses are given at first. The dose is gradually increased. Every effort is made to avoid general reactions. It is remarkable with what high dilutions they may occur even after the use of what seems like homeopathic attenuations of the dosage.

Fatal shock has occurred more than once during specific treatment, and, though infrequent, the possibility of its developing should be kept in mind and guarded against.

The exact technique, the dosage and spacing of injections, the best and latest methods of preparing and administering extracts are described in current literature on allergy and should be followed to avoid disaster.

Very satisfactory results have been obtained from hyposensitization treatment by experts.

Unger[11] secured freedom from symptoms for at least a year in this way in 33.6 per cent of 122 patients whose asthma was due to pollen.

The best results come from perennial rather than merely seasonal or preseasonal treatments.

Asthma has been classified by some authorities as *extrinsic*, due to substances from without the patient's body to which he has become sensitized and which reach his trigger cells in the bronchial mucous membrane by inhalation or the blood stream, and *intrinsic*, due to substances already present within the body. Upper respiratory infections frequently initiate asthmatic attacks, and at times no extraneous allergens can be found that are responsible. A patient may originally have become asthmatic as a result of sensitization to external antigens and may have been desensitized, but in the meantime have developed bacterial sensitivity which continues his asthma. In some such cases desensitization with bacterial vaccines has been helpful. Autogenous vaccines are to be preferred, but stock vaccine may be used.

Since a histamine-like substance is believed to have an important part in producing the allergic paroxysms, as well as in other forms of shock, efforts have been made to desensitize the patient to histamine. Histamine and histaminase have been used in Duluth as elswehere for this purpose. Recently, Horton and his co-workers[7] in the Mayo Clinic have been experimenting along this line with a new preparation known as benadryl, which has been given some publicity. It has been tried with encouraging results in other allergic conditions such as hay fever and eczema, but no remarkable success has yet been noted with asthmatic cases. Histamine is so intimately concerned in various bodily functions that the question may be raised whether complete desensitization to it would be desirable. Insulin and fever therapy have also been used in the treatment of asthma.

It is not to be expected that any form of treatment that merely relieves an attack of asthma is going to prevent recurrences. Lowering the patient's threshold of sensitivity by specific treatment is of more value, but even this will not suffice to keep the patient comfortable without avoidance of conditions which cause depletion and debility.

Nothing can be done to remove entirely the congenital handicap, the inherited constitution. With such an inheritance, the development of some degree of hypersensitivity to various allergins is inevitable. The physician's problem is the prevention of the more serious degrees of allergic response. If the child is already developing eczema, every effort should be made to forestall hay fever and especially asthma. Allergic children are a special responsibility. Allergic families must be recognized and their future health guarded. If the reactions can be kept minimal, they may not cause too great a handicap, but if these cases are neglected the results may be dire indeed.

The distress suffered by patients who have severe bronchial asthma is pitiable and is probably as hard to bear as the pains caused by cancer or heart disease, with the added foreboding of many future attacks. More appreciation of the courage and heroism of those who endure them should be shown. The sequels of repeated attacks may be definite pathological conditions of various kinds. Emphysema commonly results from them and eventually heart strain. Various conditions, migraine, gastrointestinal crises, Meniere's disease and the dreaded periarteritis nodosa have all been suspected of allergic affiliations.

The child born with an allergic tendency, a capacity for becoming hypersenitive to all sorts of allergens, should be guarded from exposure to excessive amounts of the more common and notorious ones. If a certain amount of contact with them is unavoidable, his general health and resistance must be kept at a high level throughout his whole life. This is a large contract. The men who have suceeded best in fulfilling it have not merely been skilled allergists, but they have approached the problem with the broad view of experienced internists, and in addition to specific measures have used a considerable amount of psychosomatic therapy. The patient's morale must be kept up. His apprehensions must be relieved and freedom from fear secured if possible. He must have a strong arm to lean on. His handicap may, to a large extent, often be overcome.

There are a number of men in the larger cities who in this way have made life worth living for a large number of patients during a series of years. Such help is needed everywhere.

So far we have not considered bronchial asthma as a social problem. The actual number of asthma cases is unknown. The condition is not reportable. Five-tenths of one per cent of selectees for military service in a group of 45,000 were rejected because of severe allergic states, chiefly asthma,[6] and it may be assumed that that percentage approximately represents its prevalence. There are probably several hundred thousand asthmatic persons in the United States, of whom a considerable proportion are wage earners. As already stated, perhaps 10 per cent of the population show some evidence of allergic predisposition. The avoidable economic loss from impaired working capacity is certainly worth salvaging. The expense to welfare agencies from asthmatics seeking hospital relief and change of climate is very considerable.

A national crusade for the prevention and control of asthma has been advocated and doubtless will materialize. It should follow the lines already laid down in other successful health promotion efforts. They represent the combined efforts of the medical profession and the lay public. Research should be a necessary part of the program. The facts about the condition should be widely publicized.

The services of experts in treatment should be made available to all patients. As regards asthma, physicians should recognize the occurrence of allergic families and discourage intermarriage. The children of allergic patients should be treated as

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NITROGEN BALANCE AND ITS CLINICAL APPLICATION

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THE term nitrogen balance connotes the degree of equilibrium of the body in terms of nitrogen taken into the organism and the amount lost. The main routes of nitrogen loss are through the urine, feces and exudates. In cases where the organism sustains an illness or injury, some of the body tissues are catabolized, the nitrogen excretion exceeds the ingestion of nitrogen, and the body is said to be in negative nitrogen balance. As recovery progresses the body retains more nitrogen than it excretes, thereby acquiring a positive nitrogen balance.

Since nitrogen is one of the important substances in protein, and because it is the element with which we can deal objectively in studies to determine the protein status of our patients, we will frequently use these terms, nitrogen and protein, interchangeably in this discussion. An important decisive fact to remember is that quantitatively 1 gm. of nitrogen is equivalent to 6.25 gm. of protein, or protein contains 16 per cent nitrogen.

During the past several years, the interest in protein metabolism has increased considerably. Undoubtedly the past war has exerted a great influence in this direction. One of the authors (R. E. H.) has observed the mark of protein deficiency in many European people. It was dramatic, it was pitiful, and it was deadly. We must diligently remember that protein deficiency is not a rare phenomena which is confined to the unfortunate, malnourished and starving peoples. Even those who have been blessed with health, wealth and an abundance of excellent food may feel the sting of protein deficiency should they suffer from a fracture or convalesce from an operation or illness. And let us not forget the women in gestation who require careful protein consideration, because the human embryo will most certainly demand its "pound of flesh."

Hemostasis names the physiologic process of normal balance and adaptation. We propose to emphasize the protein factor therein.

Nutritionally, the proteins are assuming the principal role for which they got their name from the Greek—first in body rebuilding. One might say that we as humans are essentially suspensions of proteins in water.

Students of protein metabolism have advanced several theories in an attempt to explain this body function. More recently Borsook and Keighly[3] have emphasized the factor of dynamic equilibrium in which breakdown and resynthesis proceed hand in hand—dietary nitrogen replacing tissue nitrogen, and the nitrogen of various organs undergoing continuous interchange. Even in a starving animal, tissue protein does not undergo catabolism alone, but is being continuously resynthesized, new protein being formed in one tissue from nitrogen derived from another.

Chemically, proteins are organic molecules composed of linked amino acids. Nutritionally, proteins are considered to be of two types, the superior and inferior—the superior being the protein with a high biological value and adequate digestibility. Animal proteins are classed here. They have a high biological value because they contain the essential amino acids (ten in all) in the proportions which closely resemble human protein. They have a 95 to 100 per cent digestibility. The inferior protein is one which is lacking in one or more of the essential amino acids or which is less digestible and absorbable. The vegetable proteins tend to fall into this group. The ingestion of inferior proteins alone necessitates wastage of its end products. The amino acids of the protein are broken down and excreted instead of entering into tissue protein, and, as a result of this, body tissues have to be broken down to furnish essential amino acids for protein metabolism. In such a situation the body enters into a negative nitrogen balance. Now how does all of this fit into a person's average daily existence? It is definitely true that a person on a well-balanced mixed diet will get all the essential nutrients. It is only when the protein intake is restricted or unutilized that one must give exact consideration and choose proteins of high biological value.

The process of protein digestion is relatively simple—the molecules are acted upon by enzymes in the stomach and small intestine, breaking them into proteoses, polypeptides and amino acids. The

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amino acids and polypeptides are absorbed and enter the portal circulation and lymph, and then the general circulation. We can readily see that any disturbance in the normal digestion of protein will definitely affect the ultimate protein metabolism, chiefly by reducing the amount of amino acids absorbed. The stool nitrogen in such cases will increase, and this is the basis of the generally utilized methods of studying nitrogen balance.

When the amino acids attain the circulation, they are either used for the restoration of tissue, for the building of hemoglobin or plasma proteins, for the manufacture of hormones or intestinal enzymes, or they are sent to the liver and deaminized, releasing carbohydrate for energy and diverting nitrogenous elements for urinary excretion.

Let us consider the production and maintenance of tissue protein, plasma protein and hemoglobin. The body gives first consideration to the production of hemoglobin, which takes preference over other body protein needs. It may draw from the tissue and plasma proteins, but does not in turn contribute to the protein pool. Perhaps this is the explanation for the rare occurrence of a true protein deficient hypochromic anemia in this country. Usually we see the iron deficiency type. Considering now the tissue protein, we know that every tissue must retain a minimum level of protein if it is to live. Under normal circumstances, cells contain more than the absolute minimum, and some of these proteins are in a labile form, readily available to the body if needed. This protein has been termed the "deposit protein." In a well-nourished, average-sized man this measures about 2 kg., which actually is a small amount. In addition to the hemoglobin and tissue protein there are the plasma proteins, which have three constituents: (1) fibrinogen, formed chiefly in the liver and used in the clotting mechanism, being converted by thrombin into insoluble fibrin; (2) globulins (alpha, beta and gamma) which are intimately concerned with certain pathological functions, such as antibody formation, and are formed in the liver and lymph nodes, and (3) albumin which is formed in the liver and is responsible for the maintenance of the osmotic pressure of the blood. It is this serum albumin which is lost in the urine in nephrosis; it is the predominant protein lost in exudates; it is the protein primarily affected in hypoproteinemia.

Because a dynamic equilibrium exists between the plasma and tissue proteins, a lowering of the serum albumin occurs only after the body proteins have been severely depleted. Elman[8] has shown that a loss of 1 gm. in the total circulating serum albumin entails the destruction of 30 gm. of body protein. For example, an average-sized man (70 kg.) has a circulating volume of 3 liters. If he loses 1 gm. of albumin per 100 c.c., it corresponds to the loss of 10 pounds of flesh. Return of the plasma albumin concentration to normal may occur before, and often long before, the body deficit is made up, but is probably only temporary and a prompt fall would result unless the protein intake is maintained. Thus the return to a normal plasma albumin indicates that the treatment is effective but not necessarily complete, and that the high protein food intake must be maintained until normal weight and strength are regained. At Halloran General Hospital, Sprintz[15] observed that a group of soldiers with chronic infections who lost one-third to one-half their original body weight following injury showed no hypoproteinemia or abnormal albumin-globulin ratio. In the presence of normal plasma proteins there may be a marked depletion of body tissue. Only if there is a low plasma protein can one attempt to make an accurate statement regarding the state of the tissue protein.

The diagnosis of protein deficiency depends upon the clinical symptoms and signs, corroborated by laboratory studies. The clinical picture is familiar to us, manifested by anorexia, weakness, mental depression, failing memory, weight loss and edema. The edema level is recognized as about 5 gm. per cent. The laboratory procedures which objectively assist in the diagnosis are: the hemoglobin determination, the plasma protein analysis and the nitrogen balance studies. The Kjeldahl procedure or one of its modifications may be used for the study of nitrogen elimination. In addition, measurements of strength and endurance by a physical fitness test or an ergograph[4] have proved to be valuable assets. The study of weight curves has been a convenient method to aid in the evaluation of a patient's protein status. Wangensteen and Varco[18] advocate the feeding of a high-protein, high-caloric diet to surgical patients who have lost body weight. They recommend at least a week of nutritional preparation for every 10 per cent of the original body weight lost. Perhaps the disadvantage of weight studies is the possibility of large fluid shifts which may mask the loss or gain of flesh.

Let us consider here two factors which affect protein metabolism—the energy requirements of the body and the special demands made during injury or illness.

The energy requirements are of paramount importance to the body and are supplied first. The three necessary nutrients are carbohydrate, fat and protein, which furnish energy at the rate of 4, 9, and 4 calories per gram, respectively. The body uses about 1,800 calories, and if this energy is not supplied in the diet, the body burns its own stores. If the body cannot obtain sufficient calories from the fat and carbohydrate, the protein catabolism is greatly increased and one can observe the "terminal rise" of nitrogen excretion, so named because the organism would die shortly after its appearance. This process is known as auto-cannibalism. Carbohydrate exerts a specific protein sparing effect apart from the fact that it furnishes energy as does fat, because the sparing effect exhibited by a given amount of carbohydrate cannot be brought about by the same amount of fat possessing double the caloric value.[2] Carbohydrate alone has a marked sparing effect, whereas fat alone does not, a positive nitrogen balance cannot be maintained on a diet of protein and fat. A probable explanation for the great sparing effect of carbohydrate is that its intermediary products of metabolism make it possible for the nitrogen resulting from tissue breakdown, in a predominantly protein and fat diet, to be used in resynthesizing amino acids for body protein.

The demands upon protein metabolism during injury or illness have added new interest and stimulus to a consideration of what happens thereto after injuries, operations or physiological upsets which occur in infectious processes, chronic wasting, malignant disease and metabolic disturbances. A review of some of the recent reports features certain dramatic and unsuspected breaks in nitrogen metabolism.

Following extensive burns, a hypoproteinemia is known to occur, due to several factors such as tissue destruction, loss of serum protein in exudates, failure of hepatic function in protein synthesis and loss of ingested food because of diarrhea or vomiting. The extent of protein loss in exudates has been shown by Co Tui[5] to vary from 1.2 gm. to 9.5 gm. per day. The extent of urinary nitrogen loss after severe burns was demonstrated by Taylor,[16] who found, in a series of twenty-two cases, a nitrogen loss of up to 45 gm. in one day, which is equivalent to about 280 gm. of protein.

The resutls of a study conducted by Hirshfield and associates[11] on twenty-three cases of thermal burns, revealed that patients excreted rather large amounts of nitrogen, and unless they were receiving a high-caloric, high-nitrogen intake, they showed a negative nitrogen balance and weight loss. Attempts were made to force large amounts of food in the early acute stage but proved unsuccessful because of intolerance. However, after three or four days the patients were able to take abundant food, and the body response showed a definite swing to a positive nitrogen balance. During the initial acute phase when the patients were unable to tolerate large diets, they were given intravenous protein hydrolysates. At present most authors agree that the use of parenteral hydrolysates should only be used during emergencies, and replacement by oral therapy at the earliest moment is greatly advantageous.

Protein deficiency develops frequently and insidiously in patients anticipating operation for peptic ulcer or gastrointestinal malignancy. In contrast, Thorton[17] did not find this commonly in patients requiring thoracic surgery. Hartzell[10] reported it in general surgical patients and Bartels[1] noted its significance in patients needing thyroidectomy. Postoperatively, the average surgical patient lapses into negative nitrogen balance unless attention is paid to the adequate intake of protein. Co Tui[6] and his associates studied nitrogen metabolism in eight patients following gastrectomy. Four patients received the usual postoperative standard ward diet of weak tea followed by frequent small feedings, slowly increased; the other four patients received large amounts of protein in the form of casein hydrolysates, which were given by a gastric tube. The results were remarkable. Those fed on the usual ward routine were in negative nitrogen balance, lost weight, regained their strength slowly and had a protracted convalescence. In contrast, the patients receiving protein hydrolysates were in positive nitrogen balance, gained weight, regained strength rapidly and had a shortened convalescence.

Others have studied the same problem in various surgical procedures such as herniorrhaphy, appendectomy and cholecystectomy. They have found that patients who are fed a high-caloric diet and are given high-protein materials parenterally and orally remain in a positive nitrogen balance and gain weight and strength in about one-half the time of those in negative nitrogen balance because of inadequate protein intake.

Some interesting work has been done at the Johns Hopkins Hospital[12,13] on nitrogen studies in patients with fractures and in those who had osteotomies. A series of six cases of fractures of the large bones of the lower extremities in otherwise healthy males revealed that these patients reached their maximum negative nitrogen excretion on the sixth postfracture day; their total nitrogen loss amounted to about 200 gm. This expressed in terms of protein would be 1,400 gm.; in terms of body tissue it equals 15 pounds. The duration of the negative nitrogen phase lasted thirty-six days. Some of these patients were studied for an additional three weeks, and it was found that they replenished their lost nitrogen at a slow rate—only 15 per cent replacement over a three-week period on a diet of 120 gm. of protein in 2,600 calories. In the cases of osteotomies these patients reached their maximum negative nitrogen excretion on the fourth day; their total nitrogen imbalance lasted nine days. Their nitrogen was restored rapidly by comparison—75 to 90 per cent in three weeks.

In the field of radiology some studies have been made at Harvard[9] which have described the nitrogen metabolism changes after use of deep x-ray therapy. In general, it was found that a shift toward a negative nitrogen balance occurred during irradiation, followed by a return to a positive balance after treatments. The negative balance tended to be delayed about forty-eight hours after beginning treatment. There was a correlation found between the degree of nitrogen loss and the sensitivity of the patient's lesion to x-ray. The patients with the most sensitive lesions would excrete the greatest amount of nitrogen, and there did not appear to be any correlation between the nitrogen loss and the dosage of x-ray. The basis for the negative nitrogen balance was the amount of tissue destroyed.

The problem of nitrogen balance occupies a prominent phase in the medical field. Of the metabolic diseases, thyrotoxicosis, Addison's disease, and diabetes mellitus present a special problem in protein metabolism. Patients who exhibit thyrotoxicosis have a greater protein need because of the increased metabolism. Weight loss may be extreme and the muscle and liver protein may be greatly reduced. A high-caloric, high-protein diet is indicated in conjunction with specific measures of treatment. It is well established in untreated or poorly controlled diabetes, that large quantities of nitrogen are excreted in the urine as the result of increased conversion of protein to carbohydrates. As a consequence of this, a large protein deficit may occur. Insulin will correct this, but an ample amount of protein is needed to correct any existing deficiencies. Great weight loss occurs in Addison's disease. Regardless of the complexities involved, it is evident that "protein sparing" by carbohydrate and fat is defeated.

In liver disease a positive nitrogen balance is a must. Cirrhosis produces liver impairment and interference with gastrointestinal function. The liver impairment is the cause of plasma protein imbalance because the liver is unable to synthesize the albumin properly. The mechanism is unknown, but clinically we know the difficulty in maintaining the serum albumin in patients with advanced cirrhoses. A study of five cases of cirrhosis by Post and Patek[14] revealed that though the patients were given high-protein diets, the serum albumin showed no correlated rise with the protein feedings. This is in direct contrast to the results obtained in cases of protein starvation without primary liver disease where the serum albumin does reflect the protein intake. This study on patients with liver cirrhosis showed that the absorption of protein was adequate (the fecal nitrogen was normal) and that the retention of nitrogen was definite as shown by the positive urinary nitrogen balance. The possible explanation for the failure of the serum albumin to increase is the faulty synthesis of the albumin by the damaged liver. In cases of infectious hepatitis the early prescribed treatment was that of a high-carbohydrate, high-caloric diet, the purpose being to restore liver glycogen and limit hepatic damage. All recent studies emphasize the greater value of protein in protecting the liver cells, especially the amino acids, cystine and methionine, which contain sulfur.

Such illnesses as chronic peptic ulcer, chronic pancreatitis, regional enteritis, ulcerative colitis, chronic gastritis and gastrointestinal malignancy have a marked effect upon protein balance and they do so because of anorexia, restricted diets, vomiting, intestinal hypermotility with diarrhea, draining fistulas and excessive putrefaction. The resultant negative nitrogen balance with hypoalbuminemia and edema of the bowel aggravate the already present gastrointestinal dysfunction, producing a vicious cycle. Because these diseases are likely to be chronic and exhibit some permanent structural or functional change, the vital factor is the proper maintenance or a satisfactory daily diet over a long period of time. However, such measures as repeated feedings of small quantities of highly nutritious food, supplemented by oral or parenteral amino acids and the use of blood transfusions, may be needed at times to correct acute deficiencies.

The role of protein in infection is still undergoing much investigation. As concerns the infection itself, perhaps there occurs a failure of antibody response in hypoproteinemic patients, because we know many of the circulating antibodies are found in globulin fractions. With regard to convalescence it has been shown that patients who have survived the acute infection will recover more rapidly and completely if they have an adequate protein and caloric diet.

We have stressed the close relationship of nitrogen balance or protein metabolism to various surgical and medical conditions, and we have shown that it is necessary in the proper treatment of many illnesses of man. Now, how can we supply the necessary proteins and keep a positive nitrogen balance in our patients? *The most effective and satisfying way is good, properly chosen food by mouth.* Unfortunately there is a limit to the amount of food a sick person can take, or will eat, and the problem of hyperalimentation can only be solved by the use of supplementary feedings. However, the use of parenteral feeding should be dictated by necessity and not by convenience.[7] In the acute cases, where hypoproteinemia is caused by surgical shock, burns or hemorrhage, the best protein replacement is plasma and whole blood; however, in chronic cases this is not too effective and is very expensive. For example, to give 100 gm. of protein by plasma or blood one would have to give the equivalent of six pints of whole blood; the hemoglobin is worthless as far as aiding tissue construction even though there is a good quantity present. For the chronic cases needing protein, there are the protein hydrolysates which are mixtures of amino acids prepared by either acid hydrolysis (splitting) or enzymatic hydrolysis. These preparations are not as expensive as whole blood or plasma and may be used in large quantities either parenterally or orally. Complete parenteral feeding can be accomplished with the amino acids, glucose, minerals and vitamins, and can be continued for one or two weeks. However, this will rarely be necessary and the early use of oral administration is strongly advised. A disadvantage of the oral route is that most hydrolysates have an unpleasant taste, and one must search for a suitable disguising vehicle. When hydrolysates are used, one must not forget that it is necessary to add vitamins, minerals, glucose and fatty acids to the diet so that the nutritional support is complete.

In conclusion, there is in the current medical literature much on experimental and clinical investigation upholding the present-day concept of protein as the most important dietary constituent in health and disease. It justly deserves to be called the "magic of life." The problem of nitrogen balance touches everyone who is confined to bed for some injury, operation, or illness. It even has become a problem for study in perfectly healthy individuals who were put to bed for a period of five days, because they, too, showed a negative nitrogen balance.

For routine medical practice, checking of nitrogenous equilibrium by complicated estimates of nitrogenous loss (urine and feces) is impractical. As we have implied, however, a knowledge of the situations where nitrogenous wastage is known to occur puts the clinician on his guard. It is easy to get laboratory estimates of blood and other tissue fluids, yet gross estimates are more informative. We may easily chart the weight curve and know that the period required for protein restoration takes more and more time dependent upon the degree of nitrogen deprivation; and the law of receding returns is dictated by the circumstance that the bodily machine (like a factory) must first build its component parts before it functions as a whole. Streamline mass production (no effort lost) is demonstrated only with the factory clicking in full co-operation—supply and disposal—a healthy unit. So it is with human economy.

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OBSERVATIONS ON THE MANAGEMENT OF VASOMOTOR RHINITIS*

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MOST rhinilogists would agree that vasomotor rhinitis is one of the unsolved problems in the specialty. Many excellent articles on the subject have appeared in the literature of recent years, but the multiplicity of treatments suggested and the variation in results obtained from them lead to the conclusion that the etiology, pathology and physiology of this condition are not well understood.

In order to limit this discussion, seasonal hay fever or pollen allergy will not be included in the term "vasomotor rhinitis."

Allergy and Anaphylaxis

It is commonly recognized that scratch tests or intracutaneous tests do not always produce positive results among patients who have perennial vasomotor rhinitis. Hansel[10] said that results of skin tests are reliable in the presence of pollen allergy, but that when other types of allergy to inhalants or food occur, skin tests may not be of value. We are all familiar with the patient who has vasomotor rhinitis but whose particular allergen cannot be detected even after a history has been carefully taken and skin tests and an elimination diet have been employed. Urbach suggested that in cases in which an allergen can be identified the condition should be termed "allergic rhinopathy," and that when no extrinsic allergen can be demonstrated the condition should be called "pathergic rhinopathy." He used the word "rhinopathy" rather than "rhinitis" because, pathologically, the condition in question is not characterized by inflammation. Williams[26] distinguished between the antigen-antibody type of allergy and the intrinsic or physical form of allergy. Hay fever is an example of the former, and nonspecific vasomotor rhinitis is an instance of the latter. Williams devised the term "syndrome of intrinsic allergy," which includes vasomotor rhinitis, Ménière's syndrome, myalgia and the vasodilating pain syndrome. He gave numerous references to support the theory that the allergic reaction, whether antigen-antibody or intrinsic, is accompanied by damage to cells as histamine is released into the tissue spaces. This reaction may be produced by a specific allergen or antibody or by various other factors which are nonallergic in nature. The latter include cold, heat, changes in atmospheric pressure, emotional disturbances and endocrine dysfunctions. Other authors have supported the view that in many cases vasomotor rhinitis is nonallergic in origin; among such authorities are Paterson, who wrote that vasomotor rhinitis is a localized manifestation, in the nasal mucous membrane, of generalized nervous imbalance, and Laub, who believed that vasomotor rhinitis is caused by imbalance in endocrine secretion.

Although anaphylactic shock in the experimental laboratory and allergy in the human being are not identical, there is a close similarity between the two reactions. Code[1] has said that the formation of a toxic chemical substance during anaphylactic shock was one of the first mechanisms suggested for the production of the symptoms of that reaction. He quoted Dale and Laidlaw (1910), who pointed out the similarity between the phenomenon of anaphylactic shock and the physiologic action of histamine. Code raised the question of whether histamine is present in the blood plasma or is held within the cells. In some very interesting experiments he found that in the blood of dogs and rabbits 74 to 89 per cent of the total histamine content of the blood was present in the leukocyte layer of centrifuged blood. In the same paper he reported that during anaphylactic shock in guinea pigs the total content of histamine in the blood was three to nine times the normal value. He also found that the usual ratio of histamine-to-plasma and histamine-to-leukocytes is reversed, meaning that during anaphylactic shock the major portion of the histamine is in the plasma, whereas the histamine content of the leukocyte almost disappears. Code emphasized, however, that the release of histamine into the blood plasma does not account for the whole picture of anaphylactic shock, for example, the incoagulability of the blood and the fact that dogs sometimes die some hours after anaphylaxis has been induced and after the histamine content of the blood has returned to normal. He suggested that histamine is released as a consequence of damage occurring within the sensitized cells, and that it is the damage to such cells that is the fundamental etiologic factor in the allergic or anaphylactic reaction. Dragstedt has raised the question of whether this substance is histamine or a "histamine-like substance."

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Troescher-Elam, Ancona and Kerr reported finding a histamine-like substance in the nasal secretions of both patients who had allergic rhinitis and patients who had the common cold. They found that the amount of this substance varied widely in the two conditions, and also found no correlation between the amount of the histamine-like substance and the number of eosinophils in the secretion.

Clinical Observations

The diagnosis of vasomotor rhinitis can be made on the basis of paroxysmal attacks of sneezing, with nasal congestion and watery or mucoid discharge. The mucosa of the nose usually appears pale and waterlogged, and a mucoid discharge is present. If the disease has not progressed too far, and is in a period of remission, the nose may appear normal on examination. The presence of polyps indicates long-standing disease. If a purulent discharge also is present, it indicates the presence of secondary hyperplastic sinusitis.

Hansel,[9] in his comprehensive monograph, referred to numerous sources regarding the significance of eosinophils in the nasal secretions of patients who have nasal allergy. More recently, Hald, D. Miller, and A. R. Miller reported on the significance of cytologic examination of nasal smears. It seems to be a well-substantiated fact that eosinophilia of the nasal secretion indicates the presence of allergy. At the Mayo Clinic, cytologic examination of nasal smears is not carried out routinely, because it is believed that a diagnosis can be made, in most cases, without it.

It is worthwhile for the physician to spend some time in questioning the patient about the relationship of his nasal symptoms to environmental factors, such as animals, house dust, occupational dusts and fumes, foods and drugs, as well as such nonallergic factors as cold, heat, changes in weather, fatigue and nervous tension. Because results of cutaneous tests are not always reliable in vasomotor rhinitis, the type of history mentioned in the preceding sentence frequently will be of more help than such tests. This is in contradistinction to the situation in seasonal hay fever, in which results of skin tests are much more reliable.

When the history indicates that the patient has extrinsic allergy, cutaneous tests should be carried out. At this point I should like to urge that the rhinologist himself perform cutaneous tests for patients whose allergic symptoms are confined to the nose. The great majority of these patients will consult a rhinologist first; he may save the patient much time and expense if he himself will do the relatively few tests needed.

Treatment

In our experience at the clinic, desensitization of a patient to the usual specific allergens which cause perennial vasomotor rhinitis has not been very successful. It is rather a question of avoidance of the offending substance. Elimination of animal pets in the home, avoidance of certain foods or drugs, and possible change of occupation all should be considered.

Hansel[9-11] and Shambaugh wrote that house dust is a major factor in most cases of vasomotor rhinitis. Shambaugh said that underlying nasal allergy is responsible for chronicity in at least 70 per cent of all cases of chronic sinusitis and 90 per cent of all cases of chronic rhinitis. He also wrote that if pollinosis is excluded, house dust is a major factor in at least 90 per cent of all cases of chronic nasal allergy. As a corollary to this theory, Shambaugh and Hansel recommended desensitization with house dust in cases in which results of cutaneous tests are negative. They stressed the use of very small initial doses and of gradual increase in such doses, until the optimal symptomatic relief is obtained. At such a time an adequate maintenance dose is to be employed. No definite rules for dosage can be given, because the condition of every patient is an individual problem. Hansel believed that many therapeutic failures, when desensitization with house dust is employed, are caused by the fact that treatment was begun with too large a dose, or that the dose used was increased beyond the optimal point.

There are several nonspecific measures that should be carried out, and these will give relief to many patients. Houser, in a recent article, discussed these empiric measures; they include the use of dustproof covers on pillows and mattresses, hypo-allergic cosmetics, elimination of household pets and cessation of the use of nose drops and inhalers.

Williams[28] has said that the overuse of nose drops is responsible for many instances of chronic nasal congestion. Lake applied the term "rhinitis medicamentosa" to such instances. At the Mayo Clinic many of our patients who have vasomotor rhinitis derive at least some improvement from cessation of all intranasal medication. Feinberg and Friedlaender have reported on chronic nasal congestion which is said to arise from the frequent use of a naphazoline nasal vasoconstrictor (privine hydrochloride).

Schall held that vasoconstrictors give only temporary relief; he advised against their use. He said that the basic pathologic feature is edema and dilation of the cavernous spaces. He recommended subepithelial electrocoagulation or destruction of the dilated spaces by means of the careful injection of sclerosing fluid. The agents recommended are a 5 per cent solution of sodium morrhuate or of a proprietary sclerosing agent (sylnasol).

Histamine and nicotinic acid.—The physiologic effects of histamine are known to be: (1) contraction of smooth muscle, (2) constriction of arterioles, (3) dilatation and increased permeability of the capillaries, with localized edema and (4) increased secretion by the secretory glands. This subject was discussed by McLaurin, as well as by Williams and Code, previously referred to herein. Because of the similarity between the action of histamine and the symptoms of allergy, these authors have treated vasomotor rhinitis by small doses of histamine in an attempt to desensitize the patient. McLaurin used histamine azoprotein, and reported eventual good results in the treatment of all but two of 102 patients. The two patients experienced recurrence. Farmer and Kaufman administered histamine subcutaneously to forty-one patients who had nasal allergy. The initial dose they used varied from 0.01 gamma (1/1,000 mg.) to 0.1 gamma. The highest dose they used was 100 gammas. They reported good results in twenty-five cases, fair results in ten, and poor results in six. Gant, Savignac and Hochwald administered dilute solutions of histamine by mouth, and attempted to provide immediate relief during attacks of vasomotor rhinitis. They reported on thirty-three patients, three of whom were un-co-operative. Of the remaining thirty, all but two were relieved by this treatment. The dose varied from 1 drop of a 1:1,000 solution to 25 drops of a 1:100 solution. The average dose was 5 to 7 drops of a 1:1,000 solution of histamine in a glass of water. Williams[26] treated his series of patients with twice-daily subcutaneous injections of histamine. In most of his cases he started with 0.1 c.c. of a 1:50,000 solution of histamine base and increased this by 0.1 c.c. each time, until symptoms disappeared or an objective return to normal was noted in the nose. The maintenance dose varied between 0.1 c.c. of a 1:50,000 dilution and 0.1 c.c. of 1:1,000 dilution of histamine base. He found, however, that in most cases in which relief was obtained, the symptoms recurred on cessation of treatment. He obtained good results for thirty-three patients and fair results for seven. For eighteen patients the treatment was a failure.

Harris and Moore first suggested the use of nicotinic acid in the treatment of Ménière's disease. They felt that the association of perceptive deafness with vertigo suggested the presence of a degenerative disease, and they further noted that a high percentage of pellagrose patients had vertigo. They administered thiamine chloride without benefit, but when 250 mg. of nicotinic acid was added daily, seventeen of twenty patients were relieved of vertigo. As stated previously, Williams said that vasomotor rhinitis and Ménière's disease are part of the intrinsic allergy syndrome. Consequently, he treated a series of patients with nicotinic acid with about the same results he had obtained from histamine.

At the Mayo Clinic nicotinic acid now is being administered to many patients who have vasomotor rhinitis. The dose must vary to some degree to fit the requirements of each patient, but the average patient receives subcutaneously an initial dose of 25 mg. of nicotinic acid (niacin), and this amount is increased by 25 mg. twice a day until 100 mg. is being administered twice daily. After a few days the patient is sent home to take 100 mg. once a day subcutaneously for one to three months. If symptomatic relief is obtained and if it continues, the patient may change to the oral form of administration and take 100 mg. of nicotinic acid twice a day. So far as is known now, this medication can be continued indefinitely, although in many cases it is possible to reduce the dose to 100 mg. taken two or three times a week.

It is too early for me to make any statement as to the long-range results of nicotinic acid therapy among my patients. I am able to say, however, that many of my patients who have vasomotor rhinitis are relieved of their symptoms over a period of several months.

Benadryl.—Beta dimethylaminoethyl benzhydryl ether hydrochloride (benadryl) is a synthetic substance which has the property of counteracting many of the physiologic effects of histamine. If the theory that the type of allergy under consideration is due to the release of histamine is true, benadryl should produce symptomatic relief in vasomotor rhinitis. The subject was discussed from several points of view in a symposium on the drug by McElin and Horton, Koelsche, Prickman and Carryer, Williams[27] and Code.[2] Williams said that the effect of benadryl on perennial vasomotor rhinitis appeared to be superior to that of nicotinic acid.

Benadryl certainly gives marked relief to many patients, but all rhinologists are familiar with the many instances in which the drug appears to be of no value. Sometimes the side effects—drowsiness or nervousness—are most annoying. This again raises the question as to whether the release of histamine is or is not the cause of the symptoms of allergy. In this respect I can do no better than to quote Code[1]: "In allergic reactions, histamine may produce a dramatic veil of symptoms, behind which lies the damaged cell."

A newer drug, pyribenzamine, appears to exert about the same effects as benadryl. Perhaps the side reactions of pyribenzamine are not so noticeable among some patients as are the side effects of benadryl.

Comment

I have not included a discussion of the treatment of nasal polyps and secondary hyperplastic sinusitis. It is sufficient to say that surgical correction of these conditions is indicated before satisfactory results can be expected from the forms of therapy described herein.

Summary and Conclusions

The relationship of anaphylaxis and allergy has been discussed, together with the theory of the release of histamine during the reactions. The types of therapy based on this theory have been described, and their results in various investigators' hands have been noted.

The syndrome of intrinsic allergy and the encouraging results of nicotinic acid therapy offer a field for further investigation. Many patients who have perennial vasomotor rhinitis can be relieved to varying degrees by nonspecific therapy, including elimination of dust, hyposensitization to house dust, electrocoagulation of the submucosa of the turbinates, elimination of household pets, and cessation of the use of nose drops.

The newer antihistamine drugs, benadryl and pyribenzamine, offer relief to many patients.

Further investigation is needed to determine what lies behind the damage to cells and the release of histamine in the allergic reaction.

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ORCHIECTOMY AND HORMONES IN PROSTATIC CARCINOMA

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CARCINOMA of the prostate has long been regarded as one of the most deadly, if not the most hopeless, diseases affecting the aging male. According to statistical studies, the condition occurs in 17 per cent of men over fifty years of age and in 25 per cent of men over sixty years of age. Unfortunately, the disease is present for a considerable length of time without the knowledge of its victim and may advance to an incurable stage before symptoms develop which lead to examination and discovery. As a result of this insidious character, less than 2 per cent of all the individuals with carcinoma of the prostate consult a physician while the condition is still amenable to a cure. The remaining 98 per cent or more, when first seen by the physician, present various stages of extension of carcinoma. Before the introduction of treatment by castration and the administration of estrogen, the disease advanced until great suffering and disability were experienced, and management of this stage of the disease was entirely a matter of relief of pain, with frequent resort to deep x-ray and opiates. With our present methods of androgen control treatment available, the progress of the disease now may be checked for periods of several months or years and patients with pain and physical disability may return to states of comfort and physical well-being. Such startling results may continue for varying periods. A small number of patients have remained well and without signs of the disease for more than five years, and there is just a possibility of complete eradication of the disease. However, relapse is the rule, as shown by follow-up studies which show the temporary nature of the good results and the recurrence of pain, loss of weight and weakness, ending in death from prostatic cancer. Since its introduction five years ago, this form of therapy has been fully tested clinically and is now firmly established as a simple and effective method of suppressing the painful and disabling effects of metastatic carcinoma of the prostate. Although beneficial results are temporary and the disease is eventually reactivated, many months or even years may be added to life.

Androgen control treatment is a method of completely disposing of the male hormone by castration or by neutralization through the administration of estrogen. The method is based upon the investigations of Huggins who showed that the epithelial cells of metastatic lesions of prostatic carcinoma are directly influenced by androgen. Androgen is a stimulant to the growth of these cells, and consequently, to the spread of the disease. Regression of the metastatic lesions will result when androgen is removed by castration or neutralized by the administration of stilbestrol. Application by Huggins of either of these methods to patients with demonstrable metastasis was followed by immediate subjective and objective improvement.

Before any method of treatment is adopted, every patient with carcinoma of the prostate should be thoroughly examined to determine the extent of the malignancy. The examination should include x-ray survey of the bones of the pelvis, vertebrae, ribs, femurs, x-ray examination of the lungs, and determination of acid phosphatase in the blood. Of particular importance is the examination of the prostate by rectal palpation. Even in early cases the findings are sufficiently characteristic to be strongly suggestive. As the condition advances in the prostate, the changes become more striking and typical and the diagnosis correspondingly easier to make. It is estimated that in 60 or 75 per cent of cases, prostatic carcinoma begins in the posterior lobe, and since this part of the prostate is immediately adjacent to the anterior wall of the rectum, it would seem that a high percentage of early involvement can be discovered by careful rectal palpation frequently carried out in all men over fifty years of age. On examination, the absence of the normal elasticity of the gland and the presence of one or more areas of induration strongly suggest the possibility of carcinoma, and when the induration is marked, there should be little doubt. When the indurated area is limited to the gland substance, and the adjacent structures at the periphery of the prostate are free, the condition may be considered localized and suitable for cure by operation. In some cases moder-

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ate degrees of induration are difficult to evaluate. These doubtful cases should be examined periodically, and other possible causes such as prostatic calculi and prostatic inflammation excluded by x-ray studies and examination of prostatic secretion. The nature of the localized induration may remain in doubt until a specimen is obtained for biopsy. This procedure is to be recommended in doubtful cases. Perineal exposure of the posterior surface of the prostate is required, and this permits immediate radical removal of the entire gland and seminal vesicles in the event the examination shows carcinoma.

Eventually the malignant process spreads and involves the entire gland substance and capsule. From the prostate the growth extends upward to invade the seminal vesicles and the base of the bladder. The process may penetrate the capsule, spreading laterally to the pelvis and downward to the membranous urethra. Rectal examination at this stage shows the prostate transformed into a stony hard, irregular, immovable mass attached to the bony pelvis laterally and extending upward beyond the reach of the finger. Spread of the disease beyond the prostatic area occurs by way of the perineural lymphatics to the regional lymphatic glands. Later the bones are involved. The pelvis, sacrum and vertebra are the most frequent sites of the metastasis, but the process may also be found in the ribs, femurs or humeri. Lesions may appear in the lungs and in the lymphatic glands of the neck and the groin. Metastatic extension to the spinal cord may occur with motor and sensory paralysis of the lower extremities.

The purpose of treatment in carcinoma of the prostate differs with the stage of the disease. In cases in which the growth is well localized within the prostatic capsule, complete eradication of the disease is possible, and this should be the aim of treatment. At present, such cases are encountered infrequently but can be expected to be recognized in increasing number when more people are aware of the possibility that carcinoma of the prostate may exist in any man past fifty regardless of the absence of suggestive symptoms. With routine rectal examination in all men past fifty, more cases will be found suitable for radical perineal prostatectomy, which is the only way cancer of the prostate can be cured.

When the malignant process has spread beyond the prostate, cure of the disease is impossible, and in this event the purpose of treatment is to relieve or diminish suffering and to prolong life. Great suffering and physical disability occur sooner or later in almost every case and require androgen control treatment. The optimum moment to begin treatment and the choice between estrogen and castration will depend upon the clinical picture and the findings on examination of the patient. From the experiences of others and that of the writer with hormonal treatment in advanced incurable prostatic cancer, several facts have emerged which are helpful in obtaining the greatest relief for the longest period of time. These observations indicate that responses to the oral use of estrogen (stilbestrol) and to castration are similar and equal, although somewhat more rapid with castration. Relief of pain, regression of metastatic lesions, return of vigor and physical capacity follow either method. These benefits are temporary and ultimately disappear. Patients relapsing following good results from estrogens will often recover following castration. Relapses following castration may or may not improve when given estrogens. Since neither estrogens nor castration prevent the development of metastasis, both should be withheld during early stages of the disease. The full benefit of both forms of treatment for the longest periods possible are then available in the metastatic stage. Stated in another way, androgen control treatment achieves the longest possible life survival for the patient when used only for the relief of symptoms of metastatic carcinoma of the prostate and to check or eradicate demonstrable metastatic lesions. The effect of the treatment may be followed by frequent determination of the serum acid phosphatase. High readings are suggestive of metastatic activity, but low or normal readings may be of no value.

Clinically, incurable carcinoma of the prostate is encountered in either one of two stages of the disease. In the first are the patients seeking relief because of urinary obstruction. They show involvement of the prostatic capsule and varying degrees of local extension of the malignancy but have no symptoms of metastasis or evidence of metastatic lesions on examination. These patients require no androgen control treatment at that stage but are examined at frequent intervals to discover the spread of the disease. This includes blood acid phosphatase and x-ray examinations of the bones.

In the second group are individuals with definite symptoms of metastasis or with demonstrable metastatic lesions. These patients require immediate androgen control treatment. Treatment is begun with stilbestrol in doses up to 10 mg. daily, which may be reduced to 2 or 3 mg. when relief is established. The effect of stilbestrol is evaluated by periodic examination, with particular reliance on the x-ray findings in the bones. The return of pain or the increase in size or number of metastatic lesions is evidence of definite relapse from the benefits of stilbestrol, and castration is then indicated. Transurethral resection may be required to relieve obstruction developing in either group.

The reports of three cases will illustrate some of the problems encountered in treatment.

Case Reports

Case 1.—M. T., aged sixty-three, had no general or urinary symptoms when seen on January 14, 1943. An indurated area on the posterior lobe of his prostate was a chance finding during a search for a focus of infection to explain his keratitis. The periphery of the gland and the seminal vesicles were normal. The acid phosphatase was normal, and an x-ray showed no evidence of bone metastasis. The diagnosis was probable carcinoma of the prostate. A biopsy was indicated.

On January 20 biopsy findings showed carcinoma, and a radical perineal removal of the prostate and the seminal vesicles was done. The specimen weighed 43 gm. and had a fairly large indurated area surrounded by a smooth intact capsule. The pathological report was adenocarcinoma of the prostate with normal seminal vesicles.

When seen on April 22, the patient was feeling fine, and his acid phosphatase was normal. X-ray revealed a questionable metastasis in the pelvis. On September 22 x-ray examination showed diffuse metastases throughout the pelvis. The patient had no symptoms, and his urinary control was improving. The acid phosphatase was still normal. Castration was performed on October 4, 1943. X-ray examination on January 6, 1944, showed that the metastases in the pelvis were unchanged. Over a year later, on March 7, 1945, the patient presented no complaints. His urinary control was satisfactory, although occasionally he had an escape of a small amount of urine in the late afternoon. The osteoblastic metastases in the pelvis were shown by x-ray to be definitely disappearing.

An x-ray examination the following year, on March 13, 1946, demonstrated that complete clearing of the osteoblastic metastases in the pelvis had occurred. No signs of them were visible. Chest x-ray findings were also normal. On May 15, 1946, forty months after the diagnosis and radical perineal prostatectomy, the patient felt healthy and vigorous.

This case emphasizes the importance of periodic rectal examination of the prostate in all men after the age of fifty. This sixty-three-year-old man had had no complaints referrable to the prostate and discovery of the malignancy was something of an accident. Unfortunately spread of the disease had occurred although not demonstrated until nine months after prostatectomy. It may be assumed that the condition could have been discovered while in a curable stage if periodic rectal examination had been made. Castration was performed when metastatic lesions were demonstrable and the disappearance of these lesions after two and a half years is striking. Eventual relapse is expected.

Case 2.—K. D., aged sixty-four, complained of sciatica and pain in the sacrum when seen on November 29, 1941. He had a slight amount of urinary difficulty. Residual urine was found to be 75 c.c. His prostate was moderately enlarged and had two hard areas extending to the periprostatic tissue, with induration of the base of the bladder and the right seminal vesicle. X-ray examination revealed a normal pelvis. The diagnosis was carcinoma of the prostate extending beyond the gland.

On April 9, 1942, the sacral and sciatic pain had increased. Stilbestrol was administered and gave relief. On May 15 the acid phosphatase was measured at 20.7 units, and x-ray examination showed metastases in the pelvis and femurs. A month later, on June 15, the pain had increased severely, and the patient was unable to walk or move his legs. On neurologic consultation a metastatic involvement of the lumbrosacral area of the spinal cord was diagnosed. X-ray examination further revealed metastases in the ribs and in the thoracic spine. Castration was performed.

By July 29 the patient felt comfortable and was able to walk alone fairly well. His clinical improvement was amazing, and by November 23 he had no pain and was able to walk satisfactorily with a cane. His appetite was good, and he had returned to work. Rectal examination showed that the prostatic hardness had disappeared.

On January 12, 1943, six months after the castration, the patient complained that the pain in his right hip had returned two weeks earlier. It seemed to be aggravated by standing. He was confined to bed and given 4 mg. of stilbestrol daily. He had had a moderate weight loss, and the lymph glands in his neck were enlarged. On March 30 an x-ray showed that he had developed a pathologic fracture of the right femur. By November 29, 1943, he was quite cachectic and was receiving frequent opiates for pain. X-rays revealed extensive metastases to the ribs and the left shoulder. On January 13, 1944, twenty-six months after diagnosis, and eighteen months after castration, the patient died.

In this case the disease was rapidly destructive, and the response to androgen control treatment short or incomplete. Stilbestrol was administered for symptoms suggestive of metastasis at a time when acid phosphatase and x-ray studies were normal. Stilbestrol failed to check the development of metastases and paralysis due to involvement of the spinal cord. Almost complete symptomatic recovery followed castration but lasted only six months and did not prevent a pathologic fracture.

Androgens are found in the urine in cases relapsing after castration, indicating extragonadal source of the male hormone. These sources are quiescent for variable periods, but eventually become activated, releasing androgens which stimulate the metastatic process. The nature of the activating agent is unknown.

Case 3.—W. S., aged seventy-one, was seen on July 12, 1942, complaining of urinary difficulty, passage of blood from the rectum, and lumbosacral pain. He had a large mass in the right groin. Rectal examination disclosed a large irregular mass involving the anterior rectal wall and the upper rectum. X-ray studies demonstrated a deformity of the rectum, as well as extensive metastases in the pelvis and vertebrae. The diagrosis was metastatic carcinoma of the prostate with urinary obstruction. A transurethral resection and castration were performed.

On August 30 the mass in the groin was diminishing, the pain was less severe, and he was no longer passing blood from the rectum. X-ray examination on September 14 showed that there had been an increase in the metastatic carcinoma in the pelvis and in the lumbar vertabrae. The mass in the groin had disappeared.

On January 24, 1944, one and one-half years after diagnosis and castration, improvement was noted in the bony changes in the pelvis and vertebrae. The patient was seen again on May 16, when he complained of pain in the rectum and stated that he was having frequent bloody stools. A colostomy was performed, followed by a posterior resection of the rectum. The pathological diagnosis was adenocarcinoma of the rectum. The patient made a good recovery and returned to business.

He was in good health when seen on May 15, 1946, almost four years after castration had been performed. He had no pain, and his colostomy was functioning well.

Here a large metastatic mass in a lymphatic gland disappeared soon after castration. Bony metastases at first increased but later a definite regression occurred. He has recovered from removal of the rectum for carcinoma, attends to business and lives comfortably four years after castration.

Summary

1. Androgen control treatment is not a cure for carcinoma of the prostate.

2. It is, however, an effective method of suppressing the metastatic stage of the disease.

3. Stilbestrol and castration are equally effective.

4. Neither stilbestrol nor castration prevents metastasis and should be withheld until metastasis has occurred.

5. Pain, x-ray changes in the bones, and elevated serum acid phosphatase are indications for androgen control treatment.

6. Return of comfort for the longest possible period of time is obtained when stilbestrol is used first and castration is withheld until the effectiveness of stilbestrol has diminished.

7. A gain in life survival of eighteen months to two years is the average, but the period may be considerably longer in some cases.

8. All men over fifty years of age should have rectal palpation of the prostate at least once a year.

9. Suspicious areas of induration may call for biopsy.

10. Radical perineal prostatectomy is indicated when carcinoma is found, and this is the only way carcinoma of the prostate can be cured.

PENICILLIN

The topical use of penicillin ointment is becoming a standard form of therapy in industrial clinics. All clinical therapeutic trials of the past several years have demonstrated the effectiveness of this new antibiotic agent when incorporated in a suitable ointment base and used locally in the treatment of impetigo contagiosa, sycosis barbae, infectious eczematoid dermatitis, ecthyma, furunculosis, carbuncles, chronic ulcers of the extremities, and other susceptible infections of the skin. The treatment of staphylococcic and streptococcic local infections of the skin has produced the most dramatic results. It has proved to be of value in the treatment of secondarily infected lesions, which are superimposed on dermatophytosis, acne vulgaris, and contact dermatitis.

Penicillin is not a cure-all for skin infections. It will not replace accurate diagnosis and other specific therapy, nor will it replace surgery and débridement. But, when used locally, penicillin is an ideal antiseptic.†—*New York J. Med.*, Feb. 15, 1947.

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†Industrial Medicine, 15:576. (Oct.) 1946.

MYCETOMA OR MADURA FOOT

Report of Cases Including One Case of Maduromycosis of the Hand

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A MYCETOMA is a chronic granulomatous lesion caused by a fungus infection and characterized by indolent inflammatory swellings containing multiple sinuses which may penetrate into the bone and discharge a substance containing tiny granules. The lesion is most commonly found in the feet, where it has been called Madura foot. The disease is rare in the United States, although it is fairly common in certain parts of the tropics. In a recent review of the subject, Burns, Moss and Brueck collected reports of thirty-five cases observed in the United States and Canada and reported three additional cases. More recent case reports have been presented by several others, including Wood, Clough, Gottlieb, Hatch and Wells, Peters, and Symmers and Sporer. It is the purpose of this article to present data on three cases of mycetoma of the foot and one case of mycetoma of the hand which have been observed at the Mayo Clinic.

The disease is endemic among out-of-door workers in such hot dry tropical regions as southern India, where it was first described, Mexico and the southwestern part of the United States. The majority of the cases seen in North America have been found in the latter region. Among 100 successive patients observed in India, ninety-one were agricultural workers. Among the thirty-eight patients in the United States, twenty-one were laborers or farmers. Physicians who have seen much of the disease comment on its frequency among people who go barefoot. In the majority of cases, the patient has been able to recall some sort of trauma, such as a laceration or contusion of the foot, which occurred several months prior to the onset of symptoms. Such trauma probably furnished the site through which the organism gained entrance.

The fungi found in cases of mycetoma may be any of a number of different species belonging to the botanical orders Actinomyces or Hyphomycetes (fungi imperfecti). Lesions caused by fungi of the former order are called actinomycoses and lesions caused by fungi of the latter order are called maduromycoses. In this country, actinomycoses are far less common in the feet than in other parts of the body, while maduromycoses are seldom found elsewhere than in the extremities. For practical purposes, the pathologic lesion of mycetoma is the same regardless of the type of infectious agent.[2,4,5,7,8]

A mycetoma is characterized clinically by its chronicity, which may be measured in terms of years, and by its relatively painless course. The lesion may involve a certain region extensively but it seldom spreads to other parts of the body. It has been described as a small subcutaneous swelling which is somewhat tender and has an indistinct base fixed to the underlying tissues. The swelling may be nodular or may appear to be an abscess or vesicle. After a variable period, from a few weeks to many months or even years, the swelling softens, breaks open and discharges a serous fluid containing small yellow, black or red granules which are fungus colonies and which are pathognomonic of the condition. The sinuses thus formed usually heal within a few days but from time to time other sinuses appear singly or in groups until the involved region is covered by them. Ultimately the swelling spreads until the whole part assumes a characteristic globoid appearance which is manifest in the foot as great thickening and loss of the plantar concavity. The lesion involves the subcutaneous tissues primarily but it may extend into the bones in the later stages. On pathologic examination the lesion is seen to consist of a honeycomb of sinuses surrounded by dense fibrous tissue. The process rarely spreads beyond the extremity and the patient's general condition may remain good. In 100 successive cases reported by Bocarro, the lesions were distributed as follows: ninety-three on the foot, three on the hand, two on the leg and one each on the scapular and sacroiliac regions.

Roentgenograms have shown no change until late in the course of the disease, when changes characteristic of the spread of a contiguous infectious process appear. The bone then shows periostitis, moth-eaten rarefaction and, ultimately, destruction with osteomyelitis and ankylosis.

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In most of the cases which have been reported, the disease has progressed steadily regardless of treatment. While the classic therapeutic agent, potassium iodide, has been of little benefit, sulfonamide therapy has been followed by temporary improvement in two cases reported recently. Adequate amounts of the new antibiotics have not, to our knowledge, been employed in the treatment. We believe that streptomycin and penicillin may be of value and should be given a thorough trial in the early stages before extensive changes in the bones have occurred. In most cases surgical excision has been the ultimate recourse. The excision should include a wide region of tissue about the diseased part, since local excision has frequently been followed by recurrence. Since the patient's general health is seldom affected, there apparently is no urgency about surgical treatment, and amputation of the extremity is resorted to as a rule only after years of recurring sinus formation with marked swelling and repeated periods of disability.

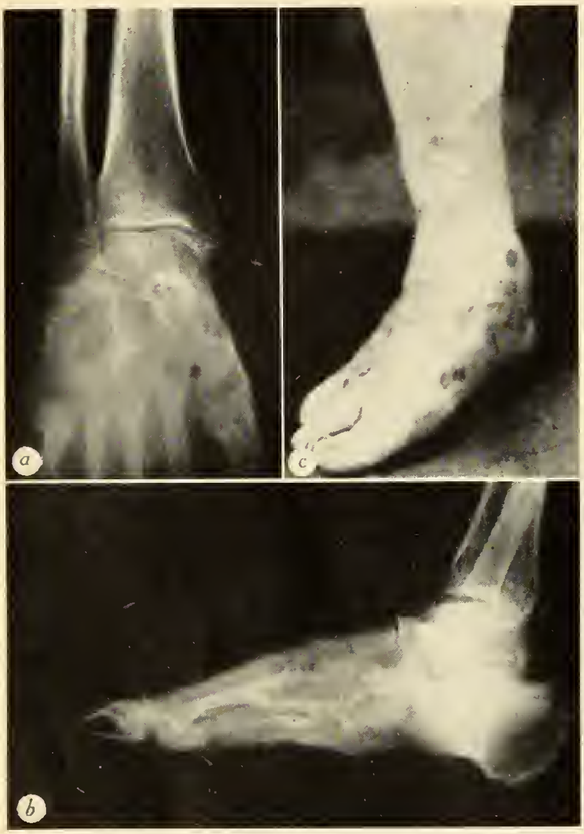

Fig. 1 (a) Anteroposterior roentgenogram of the right foot and ankle shows extensive osteomyelitis involving the tarsal, metatarsal and phalangeal bones, with ankylosis. (b) Lateral view shows involvement of the astragalus, the os calcis, tarsus and metatarsus and phalanges with destructive changes and extensive ankylosis (this is a picture of long-standing osteomyelitis and ankylosis). (c) Scars and discoloration with thickening of the foot in a case of long-standing Madura foot.

Report of Cases

Case 1.—A railroad car repairman, forty-four years of age, reported for examination at the clinic because of pain in the right foot of eleven years' duration. He had been a resident of Iowa for many years. He stated that about fourteen years prior to his admission a weight had fallen on the dorsum of his right foot. Three years afterward he had noticed a pain in the distal portion of the right foot, followed by a swelling surrounded by a region of inflammation. A month later, swelling broke down into multiple draining sinuses which healed within a few days. Similar episodes recurred at irregular intervals several times a year. Each time the sequence of symptoms was the same, starting with a rather sudden pain followed by a swelling which localized into multiple pustules. When the pustules opened, they discharged a thick yellow or red material containing "small white lumps." The foot became somewhat larger after each episode. Four months prior to the patient's admission, the most recent swelling had occurred after a blow on the foot. During the course of his illness, he had consulted numerous physicians, had received various forms of treatment and had had two operations on the foot. He further stated that eleven years prior to his admission three masses of tissue had been removed from the dorsal and medial aspects of the foot. Nine years before admission a piece of bone had been removed from the dorsum, and the plantar aspect of the foot had been drained. Cultures had been reported negative at that time.

Physical examination showed the patient to be a well-developed and well-nourished man in no distress with a temperature of 98.2° F. The entire right foot was swollen, indurated and covered by multiple small scars, some of which contained open sinuses with "punched-out" openings about 1 mm. in diameter. The swelling extended a short distance proximal to the malleoli. The patient had limited flexion and extension of the ankle and he was unable to invert or evert the foot. There were palpable lymph nodes in the right inguinal region. One of us made a clinical diagnosis of Madura foot on inspection and advised cultures for mycetoma.

The examination also disclosed the results of urinalysis to be normal except for some pus cells; the flocculation reaction was negative; the concentration of hemoglobin was 14.2 gm. per 100 c.c. of blood; the sedimentation rate (Westergren) was 48 mm. per hour; roentgenograms of the thorax were normal. A culture of the discharge from the foot showed a fungus, which was identified as Monosporium apiospermum. The roentgenograms of the right foot showed "osteomyelitis" involving the tarsus, the os calcis and the proximal portions of the metatarsal bones, with destruction and ankylosis of the regional joints.

The patient was not particularly disabled and was permitted to return to his work. He was advised to consider amputation if he should become severely incapacitated (Fig. 1, a, b and c).

Case 2.—A man, thirty-two years of age, came for examination because of a swelling of the right foot, which had been present for ten years. The patient was a laborer who lived in Indiana. Ten years prior to his admission, while at work, he had noticed a gradual onset of aching pain in the dorsum of the right foot. Eight and a half years prior to the examination he had noticed the right ankle had become swollen, painful and warm, and the skin had a purplish discoloration. The pain and swelling partially resolved after about one week but thereafter the patient had similar attacks at irregular intervals three to five times each year. Six years before coming to the clinic he had had a red indurated area on the dorsum of the foot which opened and discharged a thick yellow material for several weeks. Similar sinuses appeared in various parts of the foot thereafter.

Examination showed the patient to be a healthy young man in no distress. The temperature was 98° F. The right foot was warm and swollen, and the skin about the ankle was indurated. There were numerous depressed pigmented scars over this area, and on the posterior aspect of the ankle there were two firm red swellings. The remainder of the examination revealed negative results of urinalysis and flocculation test; a concentration of hemoglobin of 14.4 gm. per 100 c.c. of blood and a leukocyte count of 7,100 per cubic millimeter of blood; the sedimentation rate (Westergren) 10 mm. per hour. The roentgenograms of the right foot and ankle did not reveal any significant changes. A biopsy of the lesion at the site of the two small abscesses on the medial aspect of the ankle was performed; thin yellowish gray pus was removed. Microscopic examination revealed granulomatous tissue containing tiny abscesses in which were filamentous masses of fungi. These fungi had no chlamydospores and the organism appeared to be one characteristic of a maduromycosis rather than an actinomycosis. Attempts to culture the organism were unsuccessful.

The patient was given roentgen therapy and potassium iodide was prescribed. He was advised to have amputation of the foot if the condition seriously handicapped or disabled him.

Case 3.—A woman from Texas, forty-eight years of age, reported for examination because of drainage from the left heel of three years' duration. She stated that about three and a half years prior to her admission at the clinic she had had a fall from a ladder and had struck the ground firmly with her left heel. The heel had become painful and discolored following this and was painful whenever she walked. Six months later the heel had become red and swollen and her physician had incised the plantar surface with negative findings. Some weeks later a spontaneous discharge appeared and formed a sinus, which soon healed, but similar swellings and drainage appeared about the ankle at one-month to two-month intervals thereafter. From time to time various treatments, including incision, curettage, excision, cautery, local applications and roentgen therapy, had been tried without noticeable effect. The patient commented that the material from the sinuses occasionally contained masses which looked like "popcorn." She had little pain and was able to walk on the heel whenever an abscess was not forming. A culture which had been taken six months prior to her examination at the clinic was reported as showing "Madura fungus."

Examination showed the patient to be a well-developed healthy-looking person in no distress. The temperature was 99° F. The left heel contained three sinuses, one of which was exuding a thick purulent material. About the sinuses was an area of erosion and ulceration. The plantar surface of the heel was moderately tender. The foot was held in a position of equinus and the calf was slightly atrophied. The urinalysis and the flocculation test gave negative results. The concentration of hemoglobin was 11.6 gm. per 100 c.c. of blood; erythrocytes numbered 4,290,000 and leukocytes 5,100 per cubic millimeter of blood. The sedimentation rate (Westergren) was 27 mm. per hour. The roentgenograms of the thorax were normal. The roentgenograms of the left foot showed some cortical irregularity of the os calcis and osteitis in the posterior inferior portion. Repeated cultures from the sinuses of the foot failed to demonstrate any fungi, although Staphylococcus aureus and Pseudomonas were found. A biopsy of the heel was performed. The subcutaneous tissue was found to contain several necrotic regions and proved to be involved in a chronic granulomatous process containing mycotic fungi with morphologic characteristics of Actinomyces. One week later the involved region of the left heel was widely excised. It was found to contain multiple subcutaneous abscesses which extended deeply to involve the underlying bone. After this operation, the incision healed well and a split-skin graft was applied. Four weeks later, however, several tender areas appeared in the base of the incision, from which there was a purulent drainage. Three weeks afterward the leg was amputated at the junction of the upper and middle thirds of the left tibia. The postoperative convalescence was uneventful and the patient returned home in good condition.

Case 4.—A merchant, thirty-nine years of age, a native of Mexico, came to the clinic for examination because of a swelling on the palm of the left hand of seventeen years' duration. He stated that seventeen years prior to consultation, at a time when he was working on a farm, a pimple had developed on the left palm. The lesion gradually enlarged without particular pain and discharged purulent material from time to time. It had never healed. Two operations four and three years previously and two courses of roentgen therapy two years previously had not been beneficial.

Examination showed the patient to be a well-developed and well-nourished man in no distress. The temperature was 98° F. The left hand was thicker than the right and there was an indurated area over the base of the left first metacarpal bone in which there were about ten small draining sinuses from which exuded purulent material containing granules. The urinalysis and the flocculation test gave negative results. The concentration of hemoglobin was 16.3 gm. per 100 c.c. of blood; leukocytes numbered 8,000 per cubic millimeter of blood. The roentgenograms of the thorax were normal. The discharge from the hand was found to contain pinhead-

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Case Report

INTESTINAL ASCARIS DIAGNOSED ROENTGENOGRAPHICALLY IN MINNESOTA

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During the last twenty-five years, a number of reports have been published of the diagnosis of roundworm infestation by means of the x-ray examination. Due to the return of a great many veterans from tropical theaters, ascaridiasis is now appearing in the North Central United States, where it would hardly have been considered prior to the recent war. The case herein described is reported not as something new but because it is felt worth while under the circumstances to call attention of physicians to this new problem and to re-emphasize the little known fact that many cases may be diagnosed only by means of x-ray study.

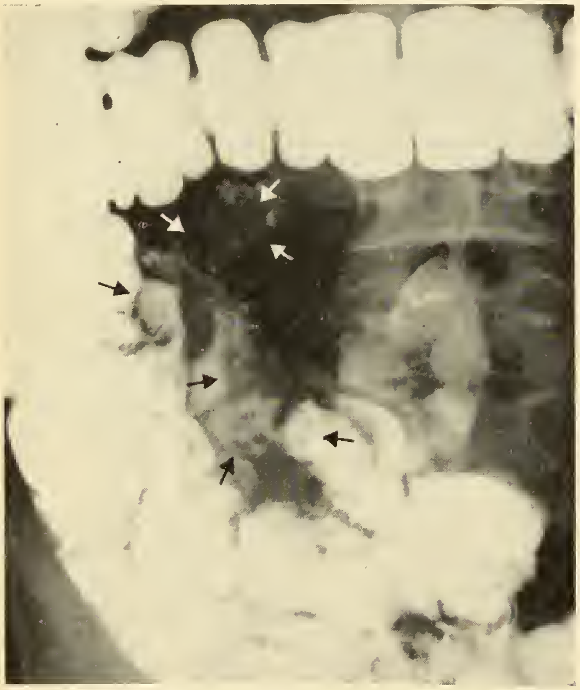

Fig. 1. Roentgenogram following barium enema shows ascaris in terminal ileum. The worm produces a bandlike area of decreased density of sinuous character indicated by arrows.

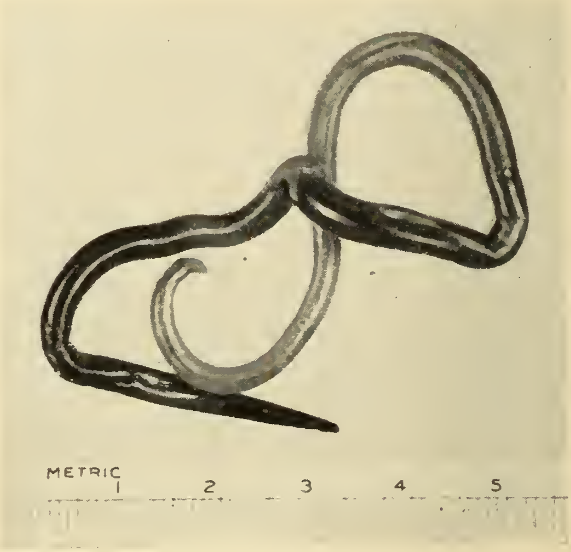

Fig. 2. Photograph of worm following expulsion.

Case Report

R. W., a thirty-one-year-old veteran who had had service in the Southwest Pacific, reported to the Veterans Hospital in Minneapolis on September 18, 1946, complaining of diarrhea and occasional low abdominal cramps. The onset of his illness apparently dated back to March, 1945, at which time he was treated for amebiasis in an army hospital in the Philippines. His symptoms cleared up after one month's treatment, and he was well until September, 1945, when his difficulty recurred. He was studied in an army hospital at that time, and stool studies were negative for ova and parasites. He was discharged with a diagnosis of anxiety state and psychoneurosis. Since that time he continuously had mucus but no gross blood. Occasional cramps was the only other symptom.

He was studied during the summer of 1946 at the Minneapolis Veterans Hospital, at which time the stools were found to be free of ova and parasites, and a proctoscopic examination to 25 cm. revealed a normal colon. A barium enema done on July 1, 1946, revealed a negative shadow in the terminal ileum which was reported as probably representing a single large ascaris (Fig. 1). An upper gastrointestinal x-ray study was normal. Because of nervousness and diarrhea he was hospitalized on September 18, 1946, for further investigation.

Physical examination was entirely normal except for some slight tenderness in the right upper quadrant of the abdomen. Laboratory workup, including stool examinations, yielded nothing of note.

Because of the positive x-ray report for ascaris and the lack of any other positive findings, it was decided to conduct a therapeutic test in spite of the absence of ova in the stool. After preparation with magnesium sulfate, one gram of hexylresorcinol was given on an empty stomach. Twenty-four hours later another dose of mag-

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nesium sulfate was given, and an 8-inch male ascaris lumbricoides (Fig. 2) was recovered from the stool. Full clinical recovery occurred immediately following expulsion of the worm.

Discussion

Diagnosis of ascaridiasis was first made by means of x-rays by Fritz in 1922. In 1925 Forsell showed definitely the value of roentgen examination in this disease and stated that if the infestation was by male worms, x-rays offered the only available means of definitive diagnosis. Fiessly in 1942 reported a case in which a single male worm was found by x-ray examination and another in which the diagnosis was made in a patient whose stools were normal.

Our case again demonstrates the value of the examination in the frequent cases of single male infestation. It should be pointed out that whereas the worm is clearly seen on the barium enema films, it could not be made out when the barium was given by mouth. Several investigators report visualization with oral barium. When the disease is suspected, it cannot definitely be ruled out by examination by either route. Only the positive findings are of real significance.

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MYCETOMA OR MADURA FOOT

(Continued from Page 409)

sized black granules which proved to be colonies of fungi belonging to the genus Madurella. On biopsy, the skin of the left thenar eminence was reported to be typical of maduromycosis. The patient was given a course of roentgen therapy and potassium iodide, with temporary improvement. Three years after the examination, the patient's left index finger and the involved portion of the palm were excised elsewhere. He was then free of symptoms until eighteen months later when there was recurrence of the disease. In a letter received four and a half years later, the patient wrote: "I am reconciled to amputation."

Comment

An analysis of these cases shows that two of the patients were inhabitants of the north central part of the United States who had never been to the tropics but whose occupations kept them out of doors. One patient was a native of Texas. The mycetoma of the hand, which is so rare a condition as to be a curiosity, was found in a patient who was a native of Mexico and who had been doing agricultural work at the time he acquired the disease. Two of the patients who had lesions of the foot gave a definite history of antecedent trauma. The infectious agent was found to be Monosporium apiospermum (order Hyphomycetes) after study of cultures in one case. In the other two cases, the morphologic examination revealed an organism of the order Hyphomycetes once, an organism of the order Actinomyces once, and gave an equivocal result once. Positive identification of the fungi is a matter of some scientific interest in this rare condition, but it depends on difficult cultural techniques and it is not essential to the diagnosis of the condition. These three cases of Madura foot and the case of maduromycosis of the hand have been presented in order to call attention to an unusual suppurative condition characterized by a granular discharge, the course of which is chronic and relatively painless.

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from March issue)

Don J. Lathrop was born at Aurora, New York, 1851, was educated in the local district schools, and at the age of nineteen years entered the Medical School of the University of Buffalo, New York, from which he was graduated in February, 1872. Millard Fillmore, later to be President of the United States, was at that time chancellor of the university, and from his hands Dr. Lathrop received his diploma.

In the spring of 1872, just out of medical school, Dr. Lathrop settled in Granger, Bristol Township, Fillmore County, Minnesota, succeeding in practice Dr. Henry Jones, who was moving to Preston. In Granger he spent the remainder of his life, the only resident physician and surgeon in the village. For a few years, beginning in 1872, Dr. Lathrop owned and operated a drug store, which in 1877 he sold to a Mr. Andrews. In a business directory of that period he was listed as physician, druggist and notary. Records suggest that he was an able and progressive member of his profession, for in 1880 he was one of the eleven physicians in the county who replied to the request of the State Board of Health for help in compiling statistics on diphtheria in Fillmore County in the period from November 1, 1879, to November 1, 1880.

On July 4, 1882, Dr. Lathrop, in firing a patriotic salute, was terribly injured and disfigured about the face by the premature discharge of the cannon; one eye was destroyed and he almost completely lost the sight of the other. In spite of his handicap he thereafter carried on his medical practice and, it has been said, even attempted to perform surgical operations. In a news item of November 18, 1886, it appeared that a few days previously Dr. Frank (perhaps Dr. Adam Frank, of Iowa), had "skillfully performed the operation necessary to insert a pair of artificial eyes which any stranger would not recognize as unnatural. The change in Dr. Lathrop's looks is marvelous. His neighbors and friends call it wonderful and join in thanks to Dr. Frank, whose professional work uniformly gives satisfaction."

Dr. Lathrop lived until May 2, 1888. (This date is from the records of the Masonic Blue Lodge, of Preston, an order which Dr. Lathrop joined on September 8, 1876.) He was succeeded in practice in his community, as has been told, by Dr. J. Herbert Darey, newly arrived from the East.

Dr. Leprohon, according to a business directory of 1882-1883, was in Lanesboro, Fillmore County, in those years; in succeeding volumes of the same work his name did not appear. Reference to official medical directories of Minnesota disclosed that R. E. Leprohon in 1879 was graduated from the

Medical Department of the University of Bishops College, Canada, and that on July 31, 1885, two years after the passage of the Medical Practice Act of 1883, Dr. Leprohon, then living in La Crosse, Wisconsin, was licensed to practice in Minnesota, and received state certificate No. 1088 (R). In 1907, and probably much earlier, Dr. Rodolphe E. Leprohon, a graduate of the Medical Department of the University of Bishops College in 1879, was living in Montreal, Quebec, Canada.

Thomas Little was one of Fillmore County's earliest physicians, inasmuch as he was established in the thriving little village of Elliota, Canton Township, prior to 1858. Elliota, platted four years earlier by Captain Julius W. Elliott, its first settler and first postmaster and blacksmith, was an important mail station at the crossroads of several stage lines and the home of various business enterprises.

In this hopeful place, which was to suffer disappointment of its ambitions, Dr. Little opened offices on Saint Paul Street and published a professional card which declared him to be physician and surgeon and dealer in drugs and medicine, paints, oils and so forth.

After 1887 Dr. Little practiced in Minnesota under an affidavit; some time between 1887 and 1890 he moved from the state to Dickinson County, Iowa, which is just across the line from Jackson County, Minnesota.

Andreas (Andrew) Pederson Lommen, son of Peder J. Lommen and Maria Arntson Lommen, was born at the farm home in Spring Grove Township, Houston County, on May 10, 1867. Peder Lommen, a native of Norway, came to America in 1851 and for two years farmed in Dane County, Wisconsin, before settling in Houston County. Marie Arntson came with her parents from Norway to Houston County in 1861. Mr. and Mrs. Lommen were married in that county and there spent their lives. They had four children, all of whom were fine citizens: Christian, Dean of the Medical Department of the University of South Dakota, in Vermillion, until his death; Andreas; Sarah Lommen (Mrs. Ning) Eley, of Des Plaines, Illinois; and Belle, a retired teacher, formerly on the faculty of the University of Iowa, of late years residing in San Diego, California.

Andreas Lommen, when a young boy, was a pupil in the rural schools near his home and in the graded schools of the village of Spring Grove; later he studied for two years at Gales College, in Galesville, Illinois, from which he was graduated. After teaching rural school in 1890 and 1891 he entered the University of Minnesota, taking one year of academic work before enrolling in the medical school, from which he was graduated in June, 1895. Licensed in the same month to practice medicine in the state, he at once established himself in Mabel, Fillmore County, not far from his boyhood home. The successful practice which he built up in his two years in the community was a prelude to more extensive work in another section of the county. In 1897, favorable opportunity offering in Lanesboro, he moved to that village, where for the next forty-five years he was an able and kindly physician, loved and honored, true to the ethics of his profession, and a willing and no less able public servant.

A man of practical wisdom and foresight, Dr. Lommen was of value in many positions of responsibility. He held office as county physician and county health officer, was active in the county, state and national medical associations, and was chairman of the board of education, and for nine terms was mayor of Lanesboro. He was a member of the Bethel Lutheran Church, the Independent Order of Odd Fellows and the Yeomen, charter member and medical adviser of the Sons of Norway and charter member of the American Legion. During World War I he was a captain in the Medical Corps of the United States Army, stationed at Camp Shelby, Mississippi, until his honorable discharge in 1918. His interests outside his professional and civic life lay in his home and family, his books, garden and farm. In his long years in Lanesboro he saw many physicians come and go. Two names, like his own, that are identified with the welfare of the community, beginning prior to 1900, are those of Dr. Johan C. Hvoslef (1839-1920), who settled in Lanesboro in 1876, and Dr. Frederick A. Drake (1870-), in Lanesboro since 1896.

Andreas Lommen on June 3, 1897, was married to Stella Johnson, daughter of Rasmus and Maria Hellickson Johnson, of Newburg, a village near Mabel. Dr. and Mrs. Lommen had four children, one of whom, Doris Estelle, died young. Of the three who were living at the time these notes were compiled, Robert M. Lommen, an electrical engineer, was in Milwaukee, Wisconsin; and Helen M. Lommen, a teacher, and Andrew Paul Lommen, an attorney, were in Lanesboro. After the entrance of the United States into World War II, Andrew Paul Lommen became a lieutenant in the administrative branch of the United States Air Corps, stationed at Tampa, Florida. A grandson of Dr. Lommen is Paul Warren Lommen.

In gradually failing health for more than a year before his death, Dr. Lommen spent the last few weeks of his life at the Veterans Hospital at Wood, Wisconsin, where he died on September 16, 1942, at the age of seventy-five years. The cause of death was stated as cerebral thrombosis with contributory heart disease, coronary arteriosclerosis with myocardial damage and insufficiency. Burial was in Lanesboro.

T. E. Loop was one of the earliest physicians in Fillmore County, established there perhaps in the middle or late fifties. Search has added nothing to the solitary known fact that he was one of the founders and the first secretary of the Fillmore County Medical Society, which was organized in the office of Dr. Lafayette Redmon, at Preston, on October 17, 1866. That Dr. Loop, then of Spring Valley, was one of this choice group of six physicians drawn from various parts of the county, is presumptive evidence of his ability, intelligence and co-operative spirit.

George Allen Love was born on March 3, 1850, at Woodstock, McHenry County, Illinois, the son of Robert Love and Agnes Dixon Love, both of whom were natives of Glasgow, Scotland. Shortly after their marriage Mr. and Mrs. Robert Love, intent on a home in the Middle West of America, came over from Scotland in a sailing vessel. They first settled in Illinois, later for several years were in and near Manchester, Iowa, and finally moved to Minnesota, in June, 1856, to take a homestead in York Township, Fillmore County. George was then six years old. The other children, all sons, were William, Robert, John and Andrew. In later years William and Robert managed the home farm, John became a druggist, and Andrew a teacher and manager of a teachers' agency in Fargo, North Dakota.

George Love began his formal education at Liberty School in York Township and in 1867, then seventeen years old, he entered the public schools of Preston, to study for three years. Beginning in 1870, he studied medicine for more than a year in the office of Dr. John A. Ross, of Preston, preparatory to entering the Bennett Eclectic College of Medicine and Surgery, in Chicago. After his graduation late in 1874 with the degree of doctor of medicine, he practiced his profession for a few months in the village of Whalen and then for two years was in partnership with Dr. Ross in Preston. Their professional card, which appeared in the *Fillmore County Republican* for January 8, 1875, set forth that Ross and Love, physicians and surgeons, had their office on Main Street, just in rear of the post office, that the office was open day and night and that all calls were promptly attended to.

In 1876 Dr. Love began the independent practice that was to continue for fifty-four years. On December 31, 1883, under the new law on medical practice, he received state certificate No. 669 (E). At this period his office was "three doors south of Tibbetts' Drug store, upstairs." He worked alone until 1912, when he was joined by his son, Dr. George R. Love, in a partnership which was to last eighteen years. In the fifty-six years of his professional career many medical practitioners came and went in the village and the community. Among the best known who were in Preston prior to 1900 were John A. Ross, Henry Jones, Lyman Viall, Charles H. Jacobson and James H. Phillips.

George Allen Love was the typical country doctor in the highest tradition, medical practitioner, counsellor, friend, and to all relationships he brought manners that were not only courteous but almost Chesterfeldian, an old acquaintance has recalled. He never refused a call, gave time, skill and knowledge without thought of financial remuneration, and in addition frequently gave financial aid to the needy. It is remembered that he often said, "It's not so easy for a man to die," and that when death was near in a home in which he was physician, he stayed by to be of aid and comfort to the dying and to the family.

In the early years of scattered communities and few telephones it was common for Dr. Love to be away several days at a time on visits to the sick, for when he reached the home to which he had primarily been called, he would find waiting a neighbor of the patient to summon him to another home miles distant, and so it would continue. Roads of course were poor or nonexistent, and travel in wet weather, through deep clay mud and across open streams, sometimes bridged with structures of uncertain strength, offered many hazards. During the time of spring freshets it was not unusual for both horses and passenger to be obliged to swim to shore; in the winter Dr. Love, like others, often had to extricate his horses from snowdrifts on the roads, shoveling them free and unhitching and leading them out one at a time. When epidemics of pneumonia, scarlet fever, whooping cough and measles, seasonal in the spring, kept the physician almost constantly on the road, the horses suffered; Dr. Love enjoyed and valued fine roadsters and, until the automobile came into use, kept four or five in his stables, so that no one of them should be overworked.

Ethical and loyal to his profession, Dr. Love was no less progressive, keeping in touch with medical advance by periods of study at Rush Medical College, by reading the medical literature and by active membership in medical associations. He is said to have been an early member of the Fillmore County Eclectic Medical Society, which was organized in 1869, the year before he began his medical study with Dr. Ross, and which functioned until 1876. He was elected to membership in the Fillmore (later Fillmore-Houston) County Medical Society, the Southern Minnesota Medical Association, the

Minnesota State Medical Association and the American Medical Association. A general practitioner, he was physician and surgeon and druggist, compounding his own medicines. For more than twenty years, well into the 1900's, he was active in public health work, aiding the State Board of Health and serving on local county and village boards as chairman or as member. In 1886 he was a member, with Dr. J. H. Phillips and Dr. C. H. Robbins, of the newly created medical examining board of the Bureau of Pensions in the county. When the "black diphtheria" broke out, he guarded the community carefully, and to avoid exposing his family to the disease he took living quarters away from his home. In one of his reports to the State Board of Health, in 1886, he stated that the May inspection was preceded by a notice in the newspaper and that "inspection found the town 40 per cent cleaner than last year. . . . A few matters needing attention were promptly attended to. . . . Conditions of county house and jail unsatisfactory. Notice to county commissioners to attend to same." During World War I Dr. Love was medical examiner for the local draft board.

Not a politician, he nevertheless took a keen interest in politics, local, state and federal, and although he inclined strongly toward the Democratic Party, he supported the candidate whom he considered best qualified for office, regardless of affiliation. For several years county chairman of the party, he was instrumental in bringing William Jennings Bryan to Preston during a presidential campaign, to the astonishment of incredulous Preston folk who believed that the great orator would not spend time on a village.

Dr. Love was a member of the Methodist Church of Preston and served as trustee on the church board. Of strong fraternal interest, he was a Mason (a member since December 6, 1876, of the Preston Blue Lodge, A. F. and A. M.; the Preston chapter of Royal Arch Masons; the Malta Commandery, Knights Templar; and the Minneapolis Consistory No. 2, Scottish Rite); a member of the Independent Order of Odd Fellows, and of the Modern Woodmen of America. His library, which was a fine one, was built up chiefly of volumes on medicine, history, travel and biography.

George Allen Love was married on March 5, 1877, to Mary Jane Kingston, who was born at Lenora, Amherst Township, Fillmore County, the daughter of the resident minister, The Reverend William Kingston. Dr. and Mrs. Love had eight children: Claudine died at the age of sixteen from typhoid fever. Bessie became a school teacher who, in the early nineteen-forties, was in Eugene, Oregon. George E. Love, who was graduated from the Medical School of the University of Minnesota, from 1912 was in partnership with his father until the death of the older man in 1930; Dr. G. R̃. Love died in 1941. Frederick Andrew Love, also a graduate of the Medical School of the University of Minnesota, became a practicing physician in Carlos, Minnesota. William was graduated from the Dental School of Northwestern University, Chicago, and practiced dentistry for six years in Preston; during World War I he entered the army, was shellshocked in service and because of the resulting disability has since been a patient in the Veterans Hospital at St. Cloud, Minnesota. Elwyn, also a dentist, a graduate of the Dental College of the University of Minnesota, followed his profession for seventeen years; he subsequently gave up dentistry and became a clerk in the post office at Preston. Helen became a school teacher, employed in the schools of Preston. Maclaren, like his brother William, was graduated from the Dental School of Northwestern University and has practiced dentistry in Preston.

On December 4, 1930, in Preston, Dr. George Allen Love died from a stroke. It is high tribute that his children remember him as a friend and boon companion. No name in the community is recalled with greater respect and honor than his, for his worth as a citizen, his ability as a physician and his kindly, unselfish and unstinted service to the sick.

That **Adolph Mac,** a medical practitioner, had his office on Grove Street, Rushford, in the late sixties is a matter of record, in Mervin's Business Directory for 1869-1870, but other than this brief item information about him is lacking.

Alexander MacDonald, although not a practicing physician in Fillmore County until 1901, when he settled permanently in the community of Chatfield, had been in Minnesota, in Austin, Mower County, and subsequently in Ortonville, Big Stone County, since 1883. Biographical data fortunately have been available and are included here in supplement any accounts of Dr. MacDonald's early professional career in the state that may appear in the narratives from other counties.

Alexander MacDonald was born at Perth, Lanark County, Ontario, Canada, on November 6, 1856, the son of Joseph MacDonald and Margaret MacPherson MacDonald. The parents were natives of Scotland; the father, a farmer, blacksmith and bailiff, was born at Perth, the mother near Sterling. Mr. and Mrs. MacDonald had five children: Jessie (Mrs. Webster), Henry, Margaret, Joseph and Alexander. One of the maternal uncles of these children, the owner of large lumber interests, lived in Ottawa. Their paternal grandfather, a member of a military band, was present at the bombardment of Copenhagen by the British in 1807, and in the War of 1812 he served with the British, it is believed, and after the war remained in America, settling on a tract of government land near Ottawa, Canada.

In Canadian schools and colleges Alexander MacDonald received his formal education, his preliminary and academic training in the grade schools of Paisley, Bruce County, Ontario, and at the Galt Collegiate Institute, at Galt, from which he was graduated in 1877. At Galt the head master was Dr. Tassie, M.A., so well known as a strict disciplinarian that many boys from a distance, even from the United States, were sent to him; cricket and La Crosse were the two games that he considered respectable; baseball and football were "Yankee" and taboo. In the spring of 1877 Alexander MacDonald went to Toronto to take the examination (which he passed) for matriculation in the Medical School of McGill University, at Montreal. During the summers of 1877, 1878, and 1879 he studied medicine under Dr. Peter Maclaren (McGill, 1861) at Paisley, and in 1883 he was graduated from McGill University with the degrees of M.D. and C.M. (Master of Chirurgery). Near the close of his medical course Dr. MacDonald for several months gained valuable experience and credit by substituting in the Montreal General Hospital for an intern who had been taken ill. At McGill he came under the teaching and influence of Dr. William Osler, then a professor of physiology: "The greatest pathologist and diagnostician the world over and still the greatest. Dr. Osler had a magnetic presence and was adored by the whole student body. Under his training I was enabled to have the credit, the honor, of passing the best bedside examination of the year 1883."

In the year of his graduation Dr. MacDonald came to the Middle West and began the practice of medicine in Austin, Mower County. He was then a member of the Medico-Chirurgical Society of Montreal. In that year he served as president of the board of pension examiners of Austin. On January 23, 1884, under the Medical Practice Act of 1883, he was licensed in Minnesota, receiving certificate No. 767; in 1887 he received licenses to practice medicine in Wisconsin and Iowa. In Austin, where by 1885 he had gained a widespread practice, he established a dispensary for the more efficient treatment of his patients. In 1888, in the interest of science, he volunteered to serve the United States Public Health Department in fighting yellow fever but because he was not immune to the disease his offer was not accepted. From 1897 to 1901 Dr. MacDonald practiced medicine in Ortonville, Minnesota, and it was there that he suffered the loss by fire of valuable and irreplaceable records, books, and clinical magazines, as well as his fine surgical instruments and electrical equipment. In Ortonville he served as secretary of the board of examiners of Civil War pensioners.

On September 30, 1890, Alexander MacDonald was married to Margaret Anna Forster, a school teacher in the community of Chatfield, who was born on January 8, 1861, of English parents, on a farm in Orion Township, Olmsted County, near Chatfield. Dr. and Mrs. MacDonald had one son, an only child, William Joseph Alexander MacDonald, born in 1893, whose life was a credit to his home and his country. Student and athlete, he was a graduate from the Law School of the University of Washington, at Seattle; in 1917 he was captain of the university track team and competed in the mile and the two mile runs. In World War I he entered the army and soon became a first lieutenant in the Rainbow Division; when he was at corps school in France, he received highest standing in tactics and was recommended for a majority. On the morning of October 14, 1918, Lieutenant MacDonald was killed in action in the Argonne. He was awarded the Distinguished Service Cross; and MacDonald Field, of the University of Washington, was named for him "for all time."

During World War I Dr. MacDonald offered his services to the army but because he was past the age limit his offer was refused. He is a Presbyterian and a member of the Independent Order of Odd Fellows, and has served as a medical examiner for the Modern Woodmen of America. He has said of himself that as a business man he was a "poor collector;" his sympathies were always with the tellers of hard luck stories.

During the years of his active and heavy practice, although Dr. MacDonald did not identify himself with medical associations, he kept abreast of medical advance by study and by reading the medical literature, a habit which he continues. He has had especial interest and pleasure in the reading of history, the classics and the works of Dickens, Thackeray and Scott and, well versed in French, for many years he read a daily French newspaper. One of his hobbies, which developed during his recuperation after an illness, has been searching locally for ginseng.

For many years after he settled in Chatfield, in 1901, a promising location and near Mrs. MacDonald's relatives, he maintained his office in his home. Of late years, because of ill health, he has not followed his profession and has lived in retirement in a comfortable home in the country near Chatfield. Mrs. MacDonald died suddenly at home from a stroke on August 29, 1943. She was survived by her husband and by one sister, Mrs. H. P. Foote, of Saint Paul.

(To be continued in the May issue)

President's Letter

MEDICAL BENEVOLENCE

The yearning of nearly every human being to care for something other than himself is one of the most praiseworthy traits of man. Strangely, this characteristic is found not only among the good and virtuous but it has been manifest in many who were evil or even depraved. In a free society, then, these may be taken as universal principles: that sympathy is excited by suffering; that cruelty is counteracted by benevolence; that new evils are met by new remedies; and that the injustice of some provokes the charity of others.

Thus it is that, even at a time when the energies of all members of our association are so greatly needed in the attempt to care for the sick, and despite the confusing and obstructive organizational tasks which demand our attention nearly every day, the better side of our nature asserts itself and we find time to reflect concerning the condition of colleagues who are less fortunate than we with respect to possession of this world's goods. We realize that some members of our profession have reached the age of retirement practically destitute. We know that some younger practitioners who have been incapacitated by early illness have found themselves and their wives and children without means of support. We are familiar with the sad plight of some widows of physicians. Our awareness of these calamitous situations, I believe, will impel us to try to mitigate them.

Already, physicians of Illinois, of Pennsylvania and probably of other states have come to grips with this problem. Several years ago the House of Delegates of one state medical association created a Committee on Medical Benevolence. Among other duties, this committee searches for members of the medical profession who are in poor health and who need financial assistance. Also, the committee is instructed to search for widows of former members of the society or their dependent children who need aid. The committee decides as to the eligibility of prospects who are discovered and as to the amount of money which is to be provided. The records are subject to annual audit but names of beneficiaries do not appear on the auditor's report and no one other than members of the committee and the auditor knows who the beneficiaries are.

One of the programs just described was begun with an appropriation of $5,000 from the treasury of the state medical association. Since then other appropriations have been added. At one time a drive was made among the members of the association for money to augment the permanent fund. The response to this request was unbelievably gratifying. There are other sources of funds. For example, a number of elderly patients of members of the association have added codicils to their wills by which they have left money to the fund. Other philanthropic individuals also have made contributions.

Interesting problems have developed as a result of such efforts. For instance, the widow of a prominent surgeon found herself almost destitute after all expenses had been paid following the sudden death of her husband. Her name was added to the list of beneficiaries of the state medical association. In another case, a young physician, with two children, contracted tuberculosis. He was confined to a sanatorium for eight months. All his expenses were met by the medical benevolence fund. The beneficiary's name was never divulged. An aged physician, after his retirement, had set up a new residence in Florida but had failed to leave his new address with his state association. Nevertheless, he was discovered in his new home when, after ten years there, he became ill and needed assistance. His problems were solved by the contributions from the fund and his economic safety was assured until his death. Many stories of this kind could be related.

The development of a medical benevolence project in our state organization, and perhaps also in the American Medical Association, is something I would like to witness and in which I would like to participate. To care for our own quietly, seems particularly appropriate in an essentially humanitarian organization such as ours; especially so when we consider that of a number of those who will need our care it can be said: "These were honored in their generations, and were the glory of their times."*

Louis A Buie

President, Minnesota State Medical Association

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*Ecclesiasticus XLIV, 7.

◆ Editorial ◆

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

MINNESOTA CANCER SOCIETY

THE Minnesota Cancer Society, along with the American Cancer Society, of which it is a component part, has shown a phenomenal increase in membership and activity in recent years. The American Cancer Society, originally known as the American Society for the Control of Cancer, languished for a number of years, until businessmen began to lend their services, and the Women's Field Army was organized to participate in the raising of funds. In 1940 the national fund-raising campaign netted about $400,000; this year it is anticipated that the amount raised will reach $16,000,000. In Minnesota alone, over $228,000 was contributed last year by more than 43,000 individuals and 4,000 corporations. Forty per cent of Minnesota's yearly contribution, earmarked for research, goes to the national organization and is apportioned to various university medical schools.

The objectives of the American Cancer Society are (1) research into the causes of cancer, (2) education of the public and the medical profession, and (3) provision of medical care for needy cancer sufferers with emphasis on these activities being placed in the order mentioned.

For a number of years another organization, the National Cancer Foundation, incorporated originally as the National Foundation for the Care of Advanced Cancer Patients, has been raising funds on a national basis for the care of incurables. This organization has apparently felt that more emphasis should be placed on this objective. It is unfortunate that this organization, with a most worthy objective, should have changed its name to the National Cancer Foundation, a name so similar to the American Cancer Society as to confuse the public. The designation of March each year for a Foundation fund-raising campaign, just preceding the April campaign of the American Cancer Society, is still further confusing to the public. One national cancer organization should be sufficient. It might be noted that the National Cancer Foundation has not received the approval of the Minnesota Community Research Council, a state-wide committee established since the war to provide reliable information on organizations soliciting funds.

After due deliberation, the Executive Committee of the Minnesota Cancer Society decided that the greatest need at present in the cancer problem in Minnesota is the provision of suitable quarters for research at the University. Minnesota was one of the first universities to establish a cancer research department, but at present it has a crying need for expanded facilities. The society therefore presented a check for $75,000 for this purpose to Dr. H. S. Diehl, dean of medical sciences of the University Medical School, at its annual meeting on March 8, 1947. Dr. Diehl, in accepting the gift for the University, indicated that the donation would doubtless be used to help defray the cost of providing suitable quarters for cancer research in the new Mayo Memorial building.

Someday the cause of cancer will be found. At present, $5,000,000 ($1,500,000 appropriated by the Federal government and $3,500,000 by the American Cancer Society) are devoted to cancer research. When we consider the governmental appropriations for research in various other lines—two billions in the development of the atomic bomb, for instance—the amount devoted to cancer research does not seem adequate for a disease which during the war period caused twice as many deaths in our country as the war itself. We do not necessarily advocate increased Federal subsidies for cancer research. Increased contributions to the American Cancer Society should provide sufficient funds to carry on the needed research, with the assurance that the ultimate goal will someday be reached.

FADING INK

THE use of ink which does not fade and which is photogenic—that is, which is reproduced clearly in photostatic copies for all records where permanency is essential—is not a new subject. Insurance companies and departments of vital statistics have insisted for years on the use of black or blue-black ink in the filling out of application blanks or certificates. Such records are of a permanent nature and are photographed, in the case of birth and death records, sometimes years later.

The popularity of so-called ball-point pens equipped with long-lasting cartridges has brought to the fore the subject of the use of non-fading ink, which produces a smooth dark line, for important documents. Ball-point pens are manufactured by a number of firms. The inks in several brands of these pens were tested about a year ago by the National Bureau of Standards, and all were found to fade quickly. Some manufacturers have been attempting to improve the ink used in these pens by adding compounds which are known to be light resistant. Tests have shown that writings made with these modified products have been found to leave a readable residue after exposure to a period of radiation equivalent to 100 hours of June sunlight. However, these improved inks are by no means in all pens.

The use of non-fading ink for physicians' records is of considerable importance. It was considered of sufficient importance by one clinic in Minnesota to justify the manufacture of its own ink for the past twenty years and the insistence on its use by all members of the group.

At the request of the Division of Vital Statistics of the Minnesota State Department of Health, the attention of the profession is called to the obvious importance of the use of non-fading, black or blue-black ink in filling out birth and death certificates.

TUBERCULOSIS SURVEYS IN MINNESOTA

In mass surveys for cases of hidden tuberculosis, the use of the 70 millimeter photofluorographic unit affords a distinct advantage over the usual method of Mantoux testing followed by examination of positive reactors on a 14 by 17-inch x-ray film. While the initial cost of a photofluorographic outfit is considerable, the overall cost in mass surveys is said to amount to about 35 cents per individual.

The detection of pulmonary tuberculosis by means of the 70 millimeter film has proved sufficiently accurate to warrant its use. Some practice is required to determine which individuals require a retake on a large film. Those individuals who show the usual involvement characteristic of pulmonary tuberculosis are referred to their family physician for determination of the presence of an active lung lesion. Although the x-ray is only a record of shadows, it is admittedly the most valuable single diagnostic aid in pulmonary tuberculosis. The referring of the individual back to his family physician places the responsibility of determining the need for treatment directly in his hands. It is to be hoped that the physicians of the state, cognizant of the importance of x-ray findings, will co-operate in every way in the mass surveys being made and about to be made.

The Ramsey County Public Health Association has purchased a 70 millimeter x-ray unit and, in co-operation with the Saint Paul Health Department, has examined several thousand individuals in the health department quarters of the Court House. Each roll of film provides for 350 exposures, and the ease with which this number of pictures can be taken in a day is impressive.

In April this unit will make a survey in North Saint Paul and then return to another section of Saint Paul.

In May a unit provided by the United States Public Health Service, in co-operation with the Hennepin County Tuberculosis Association and the Minneapolis Health Department, will attempt to x-ray the entire population of Minneapolis. This is the first time the attempt will have been made to cover a large city. Success will depend on the co-operation of all its citizens. It is a foregone conclusion that a certain number of unrecognized cases of pulmonary tuberculosis, as well as some instances of other abnormal chest conditions, will be unearthed. If the Minneapolis survey runs smoothly, doubtless the procedure will be carried out in other large cities.

One word of warning should perhaps be offered to the profession. Many cases of healed pulmonary tuberculosis will be revealed. These individuals should be accurately classified and not subjected to active treatment.

The 16,000,000 hospital admissions and the undetermined additional millions of people seen in outpatient departments yearly provide a fertile field for x-ray detection of tuberculosis. A few hospitals x-ray each patient admitted, as well as all hospital employes. The incidence of tuberculosis in this group is naturally high, and its detection is beneficial not only to the affected patient but as a protection to other patients and hospital personnel. According to *Tuberculosis Abstracts* for April, 1947, the United States Public Health Service is about to approve funds for the placement of several hundred photofluorographic units in hospitals unable to provide them for themselves.

INTRAVENOUS ETHER—AN AID TO COLLATERAL CIRCULATION

IN his discussion of Dr. Joseph Borg's thesis on "Peripheral Arterial Embolism," presented before the Minnesota Academy of Medicine and appearing in this issue of MINNESOTA MEDICINE, Dr. Moses Barron described his experience in the use of ether intravenously in a patient suffering from arterial embolism—a procedure called to his attention in Toronto.

Our attention has been drawn to an article by Katz[†] in which he described the development of his present technique in the use of ether intravenously in the treatment of ischemia of the extremities due to diabetic and senile arteriosclerosis, Buerger's disease and Raynaud's disease. Using himself as a guinea pig, Katz promptly found that intramuscular injections of ether alone or in peanut oil were very painful. The addition of benzocaine made the injections less painful but, even with the addition of penicillin, six of thirty-four patients so treated developed deep ulcers. The result, however, of intramuscular injection of this mixture of ether, peanut oil, benzocaine and penicillin, proved the marked beneficial effect of ether in these patients and led him to try the administration of ether intravenously. The safety of this method had long ago been established in producing anesthesia. He began with 10 c.c. of ether in 90 c.c. of either normal saline, 1/6 molar lactate solution, or 5 per cent dextrose in distilled water, given very slowly. A stinging sensation and the production of thrombosed veins at the site of the injection soon led him to dilute the solution to 10 c.c. of ether in 190 c.c. of diluent. In his last twenty-two patients he diluted the ether still further, giving 25 c.c. in 1,000 c.c. of diluent daily.

In his reported series of sixty-six cases treated intravenously, good results were obtained in fifty-eight. Relief of pain and improvement in circulation were outstanding. No deleterious side effects on the blood, kidneys or other tissues were noted.

How the beneficial effect of ether is produced in these patients suffering from local ischemia from one cause or another, is not known. Presumably the ether increases the collateral circulation in the affected limb. The inefficacy of remedies so far proposed for the alleviating of the suffering of these unfortunate individuals makes the trial of an apparently effective remedy well worth while.

[†] Katz, Robert A.: Impending ischemic gangrene; new non-surgical therapeutic suggestions. New Orleans M. & S. J., 98:543, (June) 1946.

BRONCHIAL ASTHMA

(Continued from Page 393)

a special problem, and predisposing causes for the development of overt asthma should be controlled. If this is done wisely, there need be no inferior complex.

In conclusion, let us all recognize the handicaps and hazards which all potentially allergic individuals must encounter and not permit them to become asthmatic. Let us study each individual asthmatic with the intention of keeping his threshhold of immunity to allergins high so that his occasional paroxysms may not become frequent or chronic, and so no one may reach the status asthmaticus or suffer from often long-delayed, serious pathological consequences of the malady.

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REPORT OF THE HOUSE OF DELEGATES—AMERICAN MEDICAL ASSOCIATION

December 9-11, 1946

There are several features about the December meeting of the House of Delegates of enough importance to warrant reporting to the members of the Minnesota State Medical Association.

First, is the question of the Rich report. A year ago, the Board of Trustees of the American Medical Association recommended that there be a complete survey made of the workings of the Association. They employed a firm called the Rich Associates to make a thorough examination into American Medical Association affairs. As a result of this investigation, the organization of the Association is now divided up into different divisions.

One is the editorial division, which is under the supervision of Dr. Morris Fishbein, who is editor of *The Journal of the American Medical Association* and *Hygeia* and has charge of all other publications of the Association.

Another division is devoted to public relations, which is to be under the guidance and direction of the General Manager of the Association. The duty of this division will be exactly what its title implies—Public Relations. The department has now been set up and is in operation; already it is showing good results.

A third division is concerned with medical economics. Much attention has centered lately on legislation for compulsory health insurance, regimentation of medicine, et cetera, which has been recently introduced not only in the national Congress but in state legislatures as well. To study matters of this kind is the purpose of the medical economic division. Posts in this division have all been filled by competent men chosen by the Trustees of the American Medical Association.

Generally speaking, there were many more matters, of no particular consequence, that needed to be checked and which could be corrected. Most of these suggestions for improving the Association's internal workings were accepted with good grace by the Delegates.

The entire Rich report, with one exception, was very instructive and for the good of the AMA. The one exception was the question of the alliance between the American Medical Association and the National Physicians Association. This report was not favorable. However, further questioning of Mr. Rich revealed that this was not based on a thorough enough investigation of the National Physicians Association. Mr. Rich promises to continue the investigation until June, at which time he plans to bring in a much more exhaustive report. The House of Delegates is looking forward to hearing more about this at the annual meeting in Atlantic City.

A second item taken up by the delegates which warrants attention is the question of the revision of the Constitution and By-Laws of the American Medical Association. What was presented in this connection was, in reality, not a new constitution and by-laws but rather a correlation of many proposed changes, passed upon previously and admitted as amendments, but never brought together in a concise form. The job of correlating all of these amendments represents a lot of hard work on the part of the committee.

The third matter on the program was a discussion of the progress in the field of prepayment medical service. From the discussions it was apparent that the American Medical Association has a well-rounded program, which provides for co-ordination of efforts at the state as well as the national level.

The next important item was probably the report by Dr. Boone, Rear Admiral in the Navy, on the conditions in coal mining districts. He reported on housing conditions and medical problems; and from his report it was learned that health and sanitary conditions are deplorable in some areas. It is hoped that miners, unions and mine operators can get together on a program which will provide better housing, better living condtitions and better medical care. For this particular purpose a certain amount is to be deducted from the price of each ton of coal mined; this amount is to be turned over to the Union. The method by which the Union shall handle this money is yet to be determined, and it was agreed by the House of Delegates that the medical profession "should play a leading role in the evolution of these plans for medical care" and should assume leadership in the formulation and establishment of reasonable and practical programs that will benefit the people. Developments in this field will bear watching by every physician. (For more details on Rear Admiral Boone's report, see MINNESOTA MEDICINE, February, 1947, Pages 190-192.)

Another important item is the present plans that are being made for a very elaborate Centennial Celebration in Atlantic City in June, which will feature a great many distinguished speakers from this country and from foreign countries.

An important discussion was held on the question of rural medical care, which seems to be a number one problem in the practice of medicine in the United States at the present time. A broad program was outlined calling for better qualified doctors in rural districts, better distribution of health centers and more nurses.

Delegates heard an interesting report from Dr. A. C. Ivy of Chicago, who was delegated by President Truman to investigate Nazi medical experiments made during the war. As a result of hearing about these experiments, certain principles to be followed in making experiments using human beings as subjects were agreed upon by the delegates. (1) Voluntary consent of the individual upon whom the experiment is to be made must be obtained before proceeding with the experiment. (2) The danger in each experiment must be thoroughly investigated previously by animal experimentation. (3) The experiment must be performed under proper medical protection and management. These general principles were accepted by the delegates; apparently none of them were followed in the Nazi human experimentation program.

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COUNTY OFFICERS HEAR PROGRESS REPORTS ON MSMA PROGRAMS

Recent accomplishments of the medical profession in Minnesota, as well as medical economic problems still facing state doctors, were reviewed when the officers of local medical societies composing the Minnesota State Medical Association gathered in Saint Paul March 1 for their annual County Officers meeting.

That rapid strides have been made by the profession in at least two fields—prepayment medical service and veterans' medical care—was apparent in the progress reports of those two programs, which during the past year have materialized from mere plans into actual organizations.

Operation of the new Veterans Medical Service division, which began functioning February 10, were described. Dr. Richard B. Hullsiek, Minneapolis, Chief Medical Officer of the Regional office of the Veterans Administration, told the delegates about the VA program and how the Veterans Medical Service division fits into the government setup. Mr. Philip J. Lemm, who has been directing the work of the new division, gave the doctors a general, over-all picture of how it operates.

Veterans Number About 400,000

Dr. Hullsiek estimated that the veterans in the state, eligible for benefits at federal expense, number between three and four hundred thousand. Included in these benefits, he said, are rehabilitation, educational training, pensions, insurance and medical service.

The work of the Veterans Medical Service division has been complicated, Dr. Hullsiek pointed out, by the slowness of the Washington VA office to approve Part II of the fee schedule developed by the State Association Veterans committee.

Part I, appended to the contract executed between the VA and the MSMA—containing as it does only some forty-eight items—barely scratches the surface of services that doctors will find it necessary to perform. This means, Dr. Hullsiek said, that the twenty-five-year-old VA fee schedule must still operate for the bulk of the services rendered by the doctors. However, all possible pressure is being exerted on the Washington office to remedy this situation, and pending approval of Part II in its entirety, assurance has been given that some fifty or sixty items under Part II, selected by the Regional Office for their frequency in authorization requests, would be appended to the contract immediately, Dr. Hullsiek said. It is hoped to have ninety-five per cent of the veterans medical service handled through the State Association VMS division in a very short time.

Prepayment Medical Service Program

Dr. O. I. Sohlberg, president of the Minnesota Medical Service, Inc., the prepayment plan approved by the House of Delegates last December to co-ordinate its services with the Minnesota Hospital Service Association, reported to the county officers that the board of directors was working hard to secure an executive director and to put the corporation on a functioning basis. Minnesota Hospital Service has been more than co-operative, Dr. Sohlberg said, and it will be just a matter of weeks before Minnesota Medical Service will be ready to start operations. Literature explaining its services in detail will be available soon.

Another report heard by the county officers dealt with conferences between the MSMA and the Insurance Liaison committees which are setting up a program that will serve as a second arm to broaden the base for prepayment medical insurance coverage in Minnesota.

Co-operation with Insurance Companies

Dr. B. J. Branton, co-chairman of the five-member MSMA liaison group, appointed by the

Council at the direction of the House of Delegates in December, explained the objectives of the Conference Liaison committee in this way:

> "Co-operation of medical groups with insurance companies is a normal procedure if for no other reason than the fact that up to now no better way has been found to eliminate the financial barrier between the patient and the doctor and the patient and the hospital than through recognized insurance companies providing the indemnity on a guaranteed cost basis.
>
> "Financial barriers, not the doctors, are the cause of inadequate medical care which low income groups receive under existing conditions," Dr. Branton declared, "and providing adequate medical care by eliminating these financial barriers stretches into the fields of economics, education, human relations, government and even politics, unfortunately."
>
> "The Liaison committee," Dr. Branton want on, "is only a part of the national setup developed by the Council on Medical Service of the AMA, and it will work wholeheartedly with the Council as it co-ordinates its activities with those of insurance companies."

Liaison Committee to Set Minimum Standards

Minimum standards will be agreed upon soon by the Conference Liaison committee, Dr. Branton announced, and the companies in the state, which after careful scrutiny meet the approval of the State Insurance Commissioner and the MSMA committee, will be given opportunity to apply for approval of the AMA. In this way Dr. Branton explained, there will be a double check—locally and nationally—before approval is granted in the state.

While medical service contracts are now being written by companies individually at an accelerated rate, under the stimulus of activities by the state medical association, it is felt that the medical profession's approval of contracts that meet minimum standards will greatly benefit the public in the protection and security afforded under these contracts, Dr. Branton said.

Rural Health a "Perennial Issue"

Rural health, which has been converted into a "perennial issue" by the Michael Davises and Senator Murrays in their carefully conceived plans to foster government medicine in this country, was discussed with all its ramifications by Dr. L. W. Larson of Bismarck, area chairman of the AMA committee on Rural Medical Service. Said Dr. Larson:

> "Medical care is only a part of the problem of rural health. Good housing, adequate and balanced diets, health education, sanitation, immunization against communicable diseases, hygiene, dental care and instruction for expectant mothers and infant care, are of equal importance."

Expanded public health activities through the development of full-time county or regional health units will solve much of these extra-medical components of the rural health problem, according to Dr. Larson.

> "Let us recognize," Dr. Larson urged, "that there are problems involved in rural health, and that, as physicians, we have a responsibility to help correct them through a constant effort to raise medical standards and to develop a spirit of co-operation with any and all people who are honestly concerned with the welfare of our rural population."

Lay Speakers at Rural Health Conference

As an expression of their appraisal of current medical care in rural areas, Dr. Larson quoted two lay speakers at the Second Annual Conference on Rural Health, held in Chicago in February. To quote Albert S. Goss, Master of the National Grange:

> ". . . Thus we see that the high cost of adequate medical care relative to farm income and the lack of modern medical facilities in rural areas adds up to a real problem. When we add to this problem the abuses of overcharge and unethical practices that some doctors are guilty of, and which most of us have been the victims of, it adds up to an overwhelming demand for better medical service."

In what amounts to a blunt indictment of medicine that could scarcely be considered a true picture of conditions as they are known to exist generally, Mr. Goss has charged, Dr. Larson said, that "the feeling has become more and more general that the medical associations, instead of devoting their chief efforts to the improvement of medical standards, have been more interested in eliminating competition in the medical field!" Mr. Goss, as quoted by Dr. Larson, maintains that this is the reason that medical service is "not only much more costly, but much more difficult to secure." Mr. Goss has further said that rural America is "up in arms" over the inadequacy of medical service resulting from this attempt by medical associations to monopolize the field.

Mr. Mertz Takes Milder Approach

Reporting further on the Chicago Conference, Dr. Larson quoted from the somewhat milder remarks of Edward H. Mertz, administrative assistant in the Department of Education of the National Farmers Union, who spoke of deficiencies in a more conciliatory vein. Mr. Mertz, Dr. Larson said, cited the following wants and needs of rural people in the way of medical and health services:

1. More doctors, dentists and nurses *closer to them*
2. More hospitals and clinics in their communities
3. Better housing and sanitary facilities
4. Sufficient income to absorb their costs

From the statements of these two men, Dr. Larson said, it may be concluded that rural people believe that there are not enough doctors and hospitals in rural areas, and that medical care is too expensive.

"Medicine Has Outgrown Horse and Buggy Days"

Looking at the contributing causes for this lack in health facilities, Dr. Larson maintained that the reasons for the lack are fairly obvious to the medical profession. To quote him:

> "Medicine has outgrown the horse and buggy days just as agriculture has. Farmers think nothing of driving 25 to 50 miles to do their shopping. In fact, many farmers consult the doctor in that trading center during the same marketing or shopping trip. In so doing they by-pass the physician in the small town en route—that is, if there is one left. Why? Because the practice of medicine has changed from the horse and buggy days when the doctor could carry his entire diagnostic and therapeutic armamentarium in one bag. Today he needs special equipment and diagnostic aids, both technical and professional, which he cannot possibly bring to the patient. The obvious answer is to bring the patient to the doctor."

While the profession itself is doing everything it possibly can to induce more doctors to locate in rural areas, Dr. Larson said, it realizes that a complete medical and hospital service cannot be developed at every crossroads, but that such service can be developed in the larger communities which are the trading centers. In order that the wave of emotional enthusiasm for the construction of a hospital in almost every small town and city will be guided in the right direction, the AMA and every state medical association is co-operating in an advisory capacity with lay committees throughout the country.

Many of the shortcomings charged to the medical profession are due to the lack of aggressive leadership in health education by local doctors. To overcome this difficulty, Dr. Larson said, state medical associations, as well as county medical societies, must become inculcated with a spirit of public welfare and leadership in worthwhile health movements.

A second, final installment of the review of the discussions held at the 1947 County Officers Meeting will appear in this column in the next issue of Minnesota Medicine.

NITROGEN BALANCE AND ITS CLINICAL APPLICATION

(Continued from Page 398)

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Minnesota Academy of Medicine

Meeting of December 11, 1946

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club, on Wednesday evening, December 11, 1946. Dinner was served at 7 o'clock and the meeting was called to order at 8:10 by the president, Dr. S. E. Sweitzer.

There were fifty members and one guest present.

Minutes of the November meeting were read and approved.

In regard to attendance at meetings, Dr. Hall made a motion that a letter be written to those who had not attended the required number of meetings during the year, calling their attention to the ruling in the Constitution regarding attendance. Motion was seconded and carried.

The annual election of officers resulted in the following being elected for the year 1947:

President..............Dr. E. M. Hammes, Saint Paul
Vice President........Dr. T. A. Peppard, Minneapolis
Secretary-treasurer........Dr. A. E. Cardle (re-elected)

The scientific program followed.

Dr. L. R. Boies, Minneapolis, read his Inaugural Thesis.

MENIERE'S DISEASE: ENDOLYMPHATIC HYDROPS

LAWRENCE R. BOIES, M.D.
Minneapolis, Minnesota

Although Ménière described a condition characterized by the symptoms of vertigo, deafness and tinnitus in 1861, it has only been within the past ten years that pathologic changes within the inner ear have been described to account for these symptoms.

We have in our literature concerning this symptomatology a confusion of terms. "Ménière's syndrome," or "Ménière's symptom complex" and the term "pseudo-Ménière's disease" in cases of vertigo without auditory symptoms or neurologic signs, are all commonly used. There are several conditions which can produce this triad of symptoms, among which there now seems to be a clear-cut clinical entity in the nature of a labyrinthine hydrops. The evidence for this has been obtained from a microscopic study of temporal bones from persons who were known in life to have experienced severe and repeated attacks of vertigo accompanied by hearing loss and tinnitus, without any other morbidity to associate with the causation of these symptoms.

Some of the references in the literature to Ménière's papers have indicated that his original description was concerned with a case of labyrinthitis. In a search for Ménière's account of his "classic case," McKenzie[9] failed to find an adequate description to fit our present conception of the clinical characteristics of the disease which bears Ménière's name. However, Simonton[13] in an exhaustive review of the literature in 1940 refers to six articles published in 1861 by Ménière, most of them in the *Gazette Medicale de Paris.* He personally translated these papers. I am indebted to him for a copy of the pertinent portions of these translations which show that Ménière did describe with clarity the symptomatology as we know it today.

The first microscopic observations on the temporal bones of persons known to have had severe attacks of vertigo, deafness, and tinnitus during life were described in 1938 by Hallpike and Cairns.[7] Lindsay[8] corroborated their findings in 1942. To date, histopathologic findings on twenty-one temporal bones from seventeen cases have been reported. The pathologic findings indicate a labyrinthine hydrops, from which it seems reasonable to conclude that it is the effects of this hydrops which produces the morbidity. To date, however, we have no definite evidence of the *etiology* of the hydrops.

The most constant histopathologic finding is a dilatation of the cochlear duct (Fig. 1). In some cases, dilatation had occurred in the saccule, the utricle, or the ductus reuniens. Other changes of a degenerative nature were noted in the maculae or cristae. A localized labyrinthitis occificans was also noted.

Before Hallpike and Cairns made their observations, Mygind and Dederding[10] in 1932 had advanced the hypothesis that the symptoms of Ménière's disease are due to a "waterlogging" of the labyrinth. This inspired certain chemical investigatons which have not established definite etiologic factors but have resulted in medical therapeutic measures which though empirical are widely used today. Furstenberg and his co-workers[5,6] in 1934 reported observations from which they concluded that the tissues responsible for Ménière's disease were sensitized to the sodium ion, and that if retention of sodium is prevented and its elimination promoted, patients suffering from the disease may be relieved. Shelden and Horton[12] in 1940 reported observations on the use of histamine to relieve the symptoms of Ménière's disease. These investigators expressed the belief that the factor most likely to be responsible for Ménière's disease is an alteration in the permeability of the capillary walls with secondary edema of the middle ear, and that histamine is an important agent in affecting capillary permeability. Williams[16] regards the symptoms of Ménière's disease as a manifestation of an intrinsic physical allergy which in his experience may respond to treatment with nicotinic acid.

Clinical Manifestations

Symptoms.—In a typical case of Ménière's disease, the patient complains of vertigo, tinnitus, and deafness.

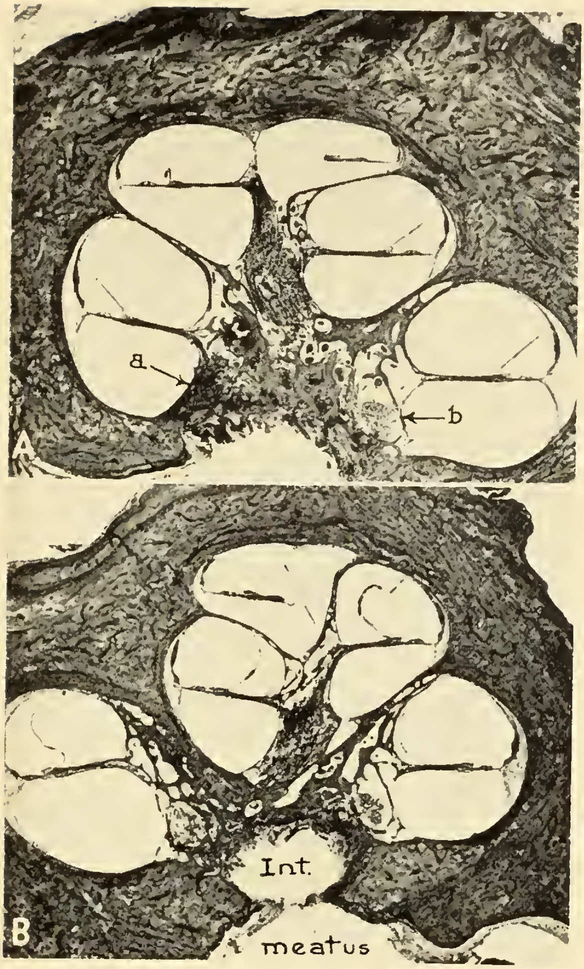

Fig. 1. Section from the temporal bones of a forty-seven-year-old man who fell during an attack of vertigo, suffered a fracture of the skull and died from a subdural hematoma. He had been examined in 1939 at the Mayo Clinic, where a diagnosis of Ménière's disease was made. He was reported to have had normal hearing through the speech frequencies in his right ear. In the left, there was a loss of 30 decibels for low tones, including the 2048 cycles. A cold caloric test showed a diminished response on the left side. The results of his general physical and neurologic examinations were normal.

(The temporal bones were sent to Dr. John R. Lindsay of the University of Chicago, who supplied the author with serial sections of these bones, one of which is pictured here. Dr. Lindsay has reported this case in detail: Ménière's disease. Arch. Otolaryng., 39:313, 1944.)

A is a horizontal midmodiolar section through the right cochlea. The ductus cochlearis is normal. The loss of Reissner's membrane in the upper coil is an artifact. The vessels are congested, and extravasated red blood cells are present in the internal meatus and the lamina cribosa and are invading the spiral ganglion (a). The spiral ganglion of the basal coil shows degeneration (b).

B is a vertical midmodiolar section of the left cochlea. The ductus cochlearis is greatly dilated and herniating through the helicotrema. The blood vessels are congested, and some extravasated blood is present in the internal meatus. The spiral ganglion shows degenerative changes in the basal coil.

The vertigo is the most disturbing symptom and may overshadow the other two. As a rule, it occurs suddenly, without warning, and may occur while the victim is at rest, even during sleep. A history is not infrequently given of the occurrence of an attack as the patient turns over in bed, or on awakening, or on getting out of bed. The duration of the vertigo may vary from a few minutes to a few days, or in a subacute form for weeks or months. In the majority of cases, the patient describes his vertigo as rotatory, in which he feels that objects about him are whirling or that he is whirling. However, a labyrinthine disturbance can occur in which the whirling sensation is absent but in which the patient experiences a swaying sensation or a sense of weakness or movement in which there is actually no sense of rotation.

The deafness in Ménière's disease usually is of the nerve type affecting the high tones first and may be severe. It tends to fluctuate but may be progressive, confined to one ear, or affect both ears in different degrees. The degree of deafness is not diagnostic.

Tinnitus is the most variable symptom of the triad. Its cause has not been established. If both ears are involved, the tinnitus is usually present in the more involved of the two ears.

Diagnosis.—Inasmuch as two of the symptoms, the vertigo and tinnitus, are subjective, the patient's descriptions of his symptoms are very important.

The caloric test will as a rule reproduce the vertigo that the patient describes. The results of this test are not, however, diagnostic of Ménière's disease. Crowe[2] has reported a series of cases in which the caloric test was normal in 35 per cent, subnormal in 19 per cent, and that in 29 per cent the labyrinth of the affected side failed to react (17 per cent were not tested).

In considering a diagnosis of Ménière's disease, it is important to exclude chronic middle ear disease, lesions of the central nervous system, cardiovascular disorders, et cetera, as a cause of vertigo.

Treatment.—Two forms of treatment are in current use. The medical treatment should be tried in all cases first; surgical therapy should be reserved for severe cases which do not respond to medical treatment. The efficacy of all treatment should be considered in light of the fact that long remissions in the symptoms may occur in this condition. Mild cases are helped by the use of sedatives.

The sodium-free diet of Furstenberg, Lashmet, and Lathrop has been referred to previously in this paper. They recommend a special diet avoiding salt and low in sodium. Ammonium chloride, an acid-producing salt, is administered in six 7½ grain capsules three times daily during meals. This drug is taken for three days and then omitted for two days. The treatment is continued for several weeks and is gradually discontinued according to the patient's condition.

Desensitization to histamine was recommended by Shelden and Horton[12] during the acute stage of Ménière's disease. They used a dosage of 1.9 milligrams of histamine acid phosphate dissolved in 250 cubic centimeters of normal physiologic salt solution and administered intravenously in approximately an hour and a half. The treatment was repeated on two or three successive days. There have been some modifications of this dosage.

Dr. A. B. Baker, who has had an extensive experience with histamine therapy at the University Hospital in Minneapolis, now uses the following method: 2.75 milligrams of histamine acid phosphate in 250 cubic centimeters of normal saline are given intravenously to outpatients daily for fourteen consecutive days. The administration is given right after a full meal. About two and a half to three hours are taken for each treatment. A glass or two of milk is given by mouth during the treatment. Four additional treatments on alternate days are then given so that the full course takes a total of eighteen treatments. The patient is then put on 50 milligrams of benadryl twice daily for six weeks.

Talbott and Brown[15] have reported success in the control of Ménière's disease by the adminstration of a potassium salt with the patient on a normal diet.

If medical treatment fails to control the vertiginous attacks of Ménière's disease, the patient then has recourse to more certain benefits from surgical therapy. This is particularly true if the disease is unilateral as evident from symptoms and signs referable to one ear only. Five different surgical procedures have been described. Dandy[3] was an exponent of nerve section. Portmann[11] described a destructive operation on the saccus endolymphaticus. Wright[17] has had considerable success with the injection of alcohol into the labyrinth by way of the oval window. Cawthorne[1] has reported a large series of cases with a high percentage of successful results by performing a labyrinthotomy and excising a piece of the membranous labyrinth. Day[4] has advocated opening the external semicircular canal anl coagulating the membranous labyrinth with a weak diathermy current (Fig. 2). It is a relatively simple procedure in which there is the possibility of preserving some of the residual hearing. Sullivan[14] has recently been able to accomplish this by a limited coagulation of the vestibular portion of the labyrinth, carrying out this part under the magnification of a dissecting microscope.

Because of the relative simplicity of Day's procedure with a possibility of preservation of residual hearing function, this operation seems destined to be generally adopted. In the past two years, I have performed this operation on five cases. Brief case histories of these patients follow:

Case Reports

Case 1.—R. J., a thirty-nine-year-old public health nurse, was first examined on August 21, 1943. She gave a history of having had recurrent attacks of vertigo for ten years with some loss of hearing and a low-pitched tinnitus in her left ear. She had been treated after the method of Furstenberg and his co-workers and had had a trial of histamine desensitization. A neurosurgeon had recommended nerve section.

Hearing tests revealed a normal response in the right ear and a marked depression in the left ear, approximately the 70 decibel line through each frequency except for the 2048, which was at the 40 decibel line.

A labyrinthotomy on the left ear was recommended. The patient decided to consider this procedure and meanwhile to try nicotinic acid therapy.

The patient was next examined on August 31, 1944, by which time she had decided to undergo surgery because the attacks were incapacitating her. Caloric tests were performed after the method of Kobrak. The reactions were within normal limits on each side.

A labyrinthotomy on the left ear with coagulation of the membranous labyrinth after the method of Day was performed on September 11, 1944. Convalescence was uneventful except for a moderate amount of vertigo which gradually disappeared. Following a week in the hospital and three additional weeks of rest, she was able to resume her duties as a public health nurse, which included driving a car in her work.

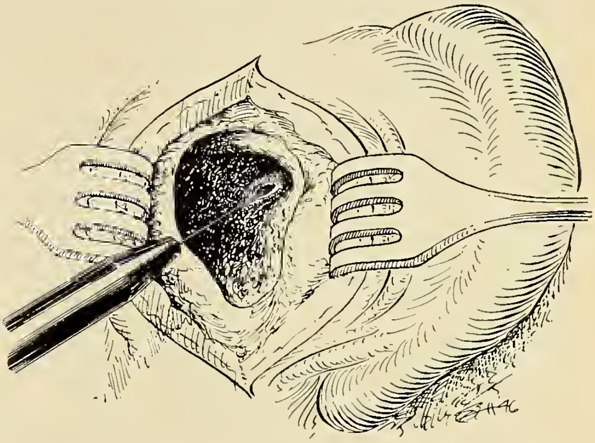

Fig. 2. A sketch of the exposure used to reach the horizontal semicircular canal which is fenestrated by use of a motor-driven dental burr. A small diathermy point is then inserted forward to the vestibule and a weak coagulating current turned on for two or three seconds. The wound is closed tightly and heals by primary union.

(The postaural route is considered to be preferable to the endaural route for these cases, because in the latter a period of epithelization is usually required before drainage ceases from the external meatus. The postaural wound is usually sealed and the ear dry in one week and no further dressing is required.)

The remaining hearing in the operated-upon ear was lost as a result of the operation. She was re-examined on several occasions during the first year following the operation. There was no recurrence of her symptoms.

Case 2.—M. G., a forty-nine-year-old man, a clerk, had had "Ménière's disease" for eight years. He had undergone extensive study and treatment at a United States Veterans Hospital. This included trials of histamine and the Furstenberg method. The patient stated that he had been deaf in the right ear for a number of years and believed that his deafness was due to mumps; he had experienced a ringing as long as the deafness.

Hearing tests revealed an absolute deafness in the right ear and normal hearing in the left ear. Caloric tests after the method of Kobrak revealed a subnormal reaction in the right ear and a normal reaction on the left side.

A labyrinthotomy with coagulation of the membranous labryinth was performed on November 7, 1945. Convalescence seemed slow. The patient seemed to fear a recurrence of the severe vertiginous attacks which he had experienced before this operation. He was last examined ten months after this operation at which time he had experienced no recurrence of his attacks.

Case 3.—J. P., a sixty-six-year-old man, a machinist, was first examined on December 7, 1945, at a hospital where he was convalescing from a gall-bladder operation. This operation had been done to relieve attacks of dizziness. His left ear had begun to "go bad" almost a year previously. The ringing which had been bad in the left ear had decreased somewhat.

Hearing tests revealed a marked loss in each ear—at the 45 decibel level by air conduction for the speech frequencies in the right ear and at the 60 decibel level in the left ear. The caloric tests with water at 68°F.

showed a reaction within normal limits on each side. The patient lived alone and was in imminent fear of an attack. He was hospitalized and given intravenous histamine daily for one week. His vertiginous attacks continued.

A labyrinthotomy was performed on the left ear on January 23, 1946, and the membranous labryinth coagulated after the method of Day. Convalescence was slow but otherwise uneventful. The patient has been free of his vertiginous attacks since the operation.

Case 4.—E. L., a forty-one-year-old man, a deaf mute, had been unable to work because of attacks of vertigo. He had tinnitus in the left ear.

Caloric tests after the method of Kobrak revealed a normal reaction in the right ear and a definitely subnormal response on the left side.

A labyrinthotomy was performed on the left ear on April 1, 1946. Convalescence was uneventful. There was no recurrence of symptoms six months after the operation.

Case 5.—J. L., a man, aged sixty-five, retired, had been incapacitated for one and a half years because of severe attacks of vertigo. He was unable to go out on the street because of fear of falling down. He had had some dizziness fifteen years previously and stated that he had been deaf in the right ear for ten years. He had had some tinnitus in both ears.

Hearing tests revealed a normal level for one of his age in the left ear and a 75 decibel level of air conduction for the speech frequencies in the right ear. Caloric tests after the method of Kobrak revealed no response in the right ear and a normal one on the left side.

A labyrinthotomy was done on the right ear on April 8, 1946, and the membranous labyrinth coagulated with diathermy. Convalescence was slow but otherwise uneventful. To date, this patient has had no recurrence of his vertigo.

Summary

A microscopic study of the temporal bones of a number of persons known to have had Ménière's disease during life has revealed evidence of a labyrinthine hydrops.

When medical therapy (histamine desensitization, the use of a sodium-free diet combined with the administration of ammonium chloride, or treatment with potassium chloride or with nicotinic acid) does not produce relief, a labyrinthotomy followed by coagulation of a limited portion of the membranous labyrinth offers a practically certain cure when the disease is confined to one side.

The labyrinthotomy is a simpler operation than nerve section. The simplest form is accomplished by making a fenestra through the bony wall of the horizontal semicircular canal. If this is followed by mild and limited coagulation of the membranous labyrinth, the symptoms of Ménière's disease are controlled and there is a possibility of preserving some hearing.

Five cases operated upon by the method of Day are reported. Relief from the attacks of vertigo was obtained in each case.

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Discussion

Dr. A. M. Snell, Rochester: I should like to compliment Dr. Boies on his excellent presentation of a difficult subject and on his appraisal of the Day operation. I was particularly glad to hear him state his criteria for diagnosis. Much has been said and written about the treatment of Ménière's disease, but in many instances these criteria have not been defined exactly. This practice has tended to cast an unfavorable light on some methods of treatment which have been advocated.

I have had the opportunity of seeing a number of patients whom Dr. Horton has treated with histamine at the Mayo Clinic, and there have been some very encouraging results. When the disease has been of short duration, this therapeutic program seems to work out very well, but many patients with disease of long standing have not been benefited by this or any other type of medical treatment. There are certainly many patients in this last-mentioned group who deserve the possible benefits of the operation which Dr. Boies has described.

Dr. Kenneth Phelps, Minneapolis: Dr. Boies' thesis is an excellent presentation of the most recent ideas concerning Ménière's disease. It brings out several points:

1. The very recent observations on the pathology of Ménière's disease are given although just how hydrops of the labyrinth causes intermittent attacks of vertigo and progressive loss of hearing is not well understood.

2. Even with better knowledge of the pathology, we do not know what causes this disease. Treatment of the cause is, therefore, impossible.

3. Dr. Boies' experience with the Day operation is very hopeful. This procedure relieves the patient of his symptoms by destroying his labyrinth, and, as Dr. Boies very carefully states, "offers a chance of preserving the residual hearing." Hearing is very poor in most patients who have had Ménière's disease for years, so it is not of major importance.

I would like Dr. Boies to tell us what success he has had with medical treatment.

Dr. Hewitt B. Hannah, Minneapolis: I appreciated hearing Dr. Boies this evening because I have had an opportunity of watching some of these patients over the last two years. I had seen one of these patients before he was operated upon, and he was extremely dizzy and had been bedridden for a long time. Dr. Boies operated on him, and since the operation he has been free from symptoms. The other one was a nurse. I did not see her before the operation but I saw her afterward, and she is very happy over her recovery.

The differential diagnosis is not always too easy. Any one who has dizziness, noises in the ear and some loss of hearing should be studied from the standpoint of the nervous system to be sure that the patient does not have an acoustic tumor or pathology in the cerebellum. In the patients whom Dr. Boies operated upon, there had been no evidence of such tumor of the acoustic nerve or pathology in the central nervous system. I understand that Dr. Dandy had operated over four hundred patients by cutting the eighth nerve. Cutting this nerve as it leaves the stem is a much more formidable procedure, and it takes a man with skill of a surgical character, similar to Dandy, to get by with this type of procedure.

Dr. Gordon Kamman, Saint Paul: I was interested in Dr. Boies' approach to Ménière's syndrome. The only reason it is any of the neurologist's business is because of the differential diagnosis. Ménière's disease itself is purely an end organ disease and does not fall within the province of a neurologist. However, certain other conditions have to be eliminated by differential diagnosis before one considers the treatment of Ménière's syndrome. I would like to ask Dr. Boies how many cases he has had of bilateral Ménière's disease. In considering the surgical treatment of this condition, one must always recognize the possibility of the same process occurring on the good side. If hearing is going to be destroyed by surgery, I think that it is very important that the patient knows before operation of the possibility of the same process occurring on the opposite side and the possibility of his ending up with a bilateral deafness. It is my understanding that by coagulation of the horizontal semicircular canal one destroys the hearing in that ear?

I feel that Dr. Boies' approach to the surgical treatment of Ménière's syndrome offers us a great deal. In the few cases that I have had the temerity to treat, I have always been disappointed with the long-range results. True, with intravenous histamine, large doses of nicotinic acid, sometimes the Furstenburg diet, large doses of potassium, and other medical measures, we are able to bring about temporary improvement in the symptoms. However, I think that most cases eventually end as surgical candidates. The simplicity of Dr. Boies' approach, the lack of surgical risk, and the short period of hospitalization certainly are enough to recommend Dr. Boies' operation.

Dr. C. N. Hensel, St. Paul: Dr. Boies has clearly defined his criteria for surgical intervention in patients with persistent vertigo in Ménière's syndrome, namely, failure to relieve them of their incapacitating vertigo by medical management, and he has reported five patients in whom he has obtained complete relief by an ingenious and nonhazardous operation, and therefore he suggests to us tonight that this is the procedure we should choose in such cases.

Having had some experience in the medical management of cases similar to those he has described, I cannot accept as our only recourse an operation which, while it relieves vertigo, renders the operated ear permanently deaf.

People with vertigo in the middle age group are numerous and the majority are not subject to labyrinthine hemorrhage. Most of them appear to be suffering from a momentary functional derangement of the labyrinth due apparently to imbalance of the blood supply with resultant increased local capillary permeability and local edema and labyrinthine hydrops.

It seems that several factors may play a part in this syndrome, i.e., increased retention of the sodium ion with increased retention of fluid, local vasoconstriction and local vasodilatation. Harris and Moore of the Crile Clinic first called attention (in 1940) to the vasoconstriction factor. They recalled that physicians treating pellagrins found a high percentage with rotational vertigo, which seemed to be on a nutritional basis. So these physicians started in to treat their patients suffering from Ménière's syndrome with large doses of thiamine chloride with success. Then they tried treating such patients with nicotinic acid, with unsatisfactory results.

Finally, they combined the treatment and gave thiamine chloride 10 mg. twice daily by mouth and nicotinic acid 50 mg. five times a day, and began to get results. They noted that within two weeks half of their cases began to improve, and within six weeks seventeen out of twenty cases had been entirely relieved and that the final three cases were improved. They were impressed that the majority of their vertiginous patients had peculiar dietary habits, were either vegetarians or carbohydrate addicts, or consumed inadequate proteins due to faulty dentures.

Since reading their article, I have observed and treated at least five patients with Ménière's syndrome, observing strict restriction of sodium chloride and fluids and giving adequate doses of thiamine and nicotinic acid.

One woman who improved has been lost track of since she removed to California. The others have all continued to maintain their equilibrium and be free from vertigo for from two to five years.

The most dramatic patient was a bond salesman, aged fifty-eight, who had to retire in March, 1941, because of attacks of sudden "falling" vertigo. He has been free from attacks of vertigo for the past five years on a low-salt low-fluid diet and has been taking 30 mg. thiamine and 300 mg. nicotinic acid a day. In spite of the fact that he has developed intermittent claudication and his blood pressure has risen from 160/90 to 200/100, he is continuously free from attacks of vertigo.

Therefore, I believe that unless such a thorough-going and meticulous regime has been instituted and failed, we should not have recourse to surgical intervention.

Dr. Boies, in closing: Dr. Phelps asked what experience I had from medical treatment. Most of the patients I have seen with vertigo, tinnitus and deafness have been referred to me by internists or general practitioners and the medical treatment has usually been carried out by them. The mild cases and some that are more severe seem to respond to these various forms of treatment. It has been my observation that the best results have been obtained with histamine. In the University Hospital the cases have been treated by Dr. A. B. Baker, who has given them intensive histamine therapy for fourteen days and then followed this by treatment on alternate days until a total of eighteen treatments have been received. The mild and some moderately severe cases seem to have been controlled in a fair measure. However, there seems to be a lack of permanency to this treatment.

When there is bilateral involvement, it is difficult to differentiate as to the actual site of the phenomenon which produced the symptoms. Fortunately, most of the cases seem to be unilateral. In the cases I have reported, the nurse had gone five years without developing symptoms on the opposite side, and another patient had gone ten years. In cases of marked changes in the ear with extensive dilatation of the cochlear duct, I rather believe that these changes are irreversible.

PERIPHERAL ARTERIAL EMBOLISM

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Peripheral arterial embolism presents a problem in diagnosis and treatment which is of challenging importance. Where large vessels are involved, the result is usually gangrene leading to death in approximately 90 per cent of all patients with expectant treatment or amputation. These poor results are emphasized in the experience with this type of case at Ancker Hospital over the past thirteen years, in which eleven cases of peripheral arterial embolism were diagnosed and no recoveries recorded. Such disappointing experiences point to a woefully inadequate awareness of the therapeutic possibilities available and emphasize the need for calling attention to this problem. The results of missionary efforts of this nature are seen in the reports on this subject from Sweden, and it has been well shown that many lives will be saved and amputations prevented where the profession is alert to its responsibility. This thesis attempts to review the significant contributions to the subject and to call attention to the importance of recent advances in the treatment of this condition.

Peripheral arterial embolism presents an emergency of great urgency. It is a condition which is usually seen first by the general practitioner or the internist, especially the cardiologist. It is upon them that the responsibility lies for treatment in which delay cannot be permitted. Recent reports emphasize the value of medical measures, but reliance on them alone is dangerous, and it must be recognized that surgery in the form of embolectomy must always be considered and, where indicated, must be carried out within a time interval which will give the most favorable results. It has never fallen to the lot of any one physician to accumulate a large series of cases, but the consensus as revealed in case reports in the literature points to a modern concept of the condition and its treatment which materially improves the outlook for these patients. The two factors which are most important are early recognition of the condition and the availablity of a surgeon competent to do vascular surgery.

Historical

Until the turn of the century, arterial emboli were only of pathologic interest. The idea of removing the offending embolus had been considered, but it was not until 1895 when Ssabanejeff first attempted the surgical removal of an embolus from the femoral artery in a case of a twenty-eight-year-old woman with rheumatic heart disease. Moynihan (1907) and Handly (1907) next approached it unsuccessfully. In 1907 Stewart reported the first attempt in this country. In 1909 Murphy[30] unsuccessfully operated to remove a femoral embolus four days after the onset. The first successful embolectomy, left femoral, was performed by Lahey in 1911 on a patient thirty-eight years of age with mitral stenosis, on whom operation was performed six hours after the onset. In 1912 Einar Key,[15] in Sweden, did the first of his series of embolectomies on fifteen patients which he reported in 1921 with the first review of the literature, embracing forty-five cases with thirteen successful results. Key so well educated the Swedish profession that by 1927 he was able to report 145 Swedish cases with eighty-six successful results out of a total of 216 cases collected from the literature. So slowly did the American profession become aware of the therapeutic possibilities of embolectomy that in 1928 Pemberton[37] was able to collect only twenty cases reported in the United States and Canada. Even the British failed to heed the work of Key because it was 1925 before the first successful embolectomy was reported in England. Subsequently reviews of the subject have been made by Reed and Andrus (1927), Andrews and Harkins (1932), Pearse (1933), Danzis (1933), Linton (1941), Pratt (1942), Lesser (1943), and notably McClure and Harkins (1943) who have presented the most comprehensive recent review, based on 690 reported cases. The increasingly favorable results of therapy insistently emphasize the need for an enlightened attitude toward the problem.

Incidence

The incidence of peripheral emboli is much greater than the reports would indicate. Many cases of reported gangrene or arterial thrombosis are probably primarily embolic, especially where large vessels, notably those proximal to the radial and popliteal arteries, are involved. Out of 690 embolectomies reported, 382 were Swedish cases collected by Key[16] up to 1936, emphasizing again the attention paid to the condition in Sweden and the inadequacy of domestic reports as a guide to incidence. Murray[31] reported thirty cases in the Toronto General Hospital in five years preceding 1936. Lund[24] found fifty-five cases in the Boston City Hospital in seven years prior to 1937. Forty-six cases were reported by McKechnie and Allen[28] over a ten-year period. Agar[1] reported seven cases in five patients in three years from 28,000 hospital admissions at Leeds. Eleven cases reviewed here have been recorded at Ancker Hospital, Saint Paul, over a thirteen-year period. Incidence is about the same in both sexes.[28] Study of 129 cases by Danzis[4] revealed an average age of forty-nine years, the range being seventeen months to eighty-two years. Most of them occurred between the ages of thirty and seventy, with the peak decade being fifty to sixty years.

Pathogenesis

Arterial emboli are caused by the breaking off of pieces of thrombi, the majority of which come from the left side of the heart. Rarely they may originate from thrombophlebitis or phlebothrombosis and find their way to the arterial tree through a patent foramen ovale. The great majority may be traced to rheumatic mitral or arteriosclerotic heart disease, frequently with auricular fibrillation, in which thrombi form in the left auricle. Others come from mural thrombi which form as a result of myocardial infarction. Danzis[41] states that 70 per cent are of pure cardiac origin and that most of the rest are of cardiac origin associated with some disease such as diabetes, arteriosclerosis, or thyroid disease. Rarely the embolus may come from an arterial thrombus attached to an arteriosclerotic plaque of a large vessel. McKechnie and Allen[28] reported that of forty-six cases, forty-one were of cardiac origin, two from pelvic carcinoma, one had a patent foramen ovale, one was arteriosclerotic, and one followed a cervical rib operation. Pearse,[36] reviewing 296 cases, found the following known source distribution:

	Per cent
Heart disease	69.2
Postoperative states	13.0
Infection and trauma	2.1
Arteriosclerosis	2.1
Aneurysm	1.8
Abortion and delivery	1.8
Miscellaneous	2.8
Phlebitis	0.3

When an embolus is sent out into the arterial tree, it usually passes the hazards of the innominate, left common carotid and left subclavian arteries, the reason for which is not entirely clear. Depending on its size, it then passes on to lodge in some more distant part of the arterial system, usually at a bifurcation. Riddell[39] states that only 12.1 per cent of emboli reach the upper extremity while 87.9 per cent reach the lower.

On lodging, the sudden insult to the artery sets up a reflex arterial spasm which is extremely important in affecting the clinical course and outcome of the accident. After a variable period of time, changes occur in the endothelial wall which lead to the formation of a secondary thrombus. Key[16] states that this thrombus may start as early as two hours after lodgment or may not appear as late as twenty-four hours, the longest reported period between the onset and operation without gangrene. This probably depends on the amount of reflex arterial spasm present and the extent of effective collateral circulation. Linton[21] states that secondary thrombi may occur as early as nine hours. These thrombi propagate distally and may completely plug all the tributaries and ramifications of the vessel, being hard to remove. On the other hand, proximal propagation is usually only a few centimeters and is easily removed.

Emboli experimentally produced by Murray[32] revealed no reaction in the vessel wall at six hours, considerable change with adhesion at twenty-four hours, and a firm thrombolic adherence at forty-eight hours with an invasion of the clot and vascular wall by leukocytes.

Considerable attention must be paid to the role played by reflex arterial spasm in this condition, the relief of which is important in treatment. That traumatic vascular spasm is important clinically has been long recognized but little heeded. The occurrence of this condition following external trauma was first reported in 1915 by Fritz Kroh, and forty-four cases were reported up to 1935 in a review by Montgomery et al.[29] That vascular occlusion will produce the same result is generally accepted. The distally propagated thrombosis following occlusion is often very much narrower than that above the embolus, a fact which can hardly be explained otherwise than by spasm. Also, the experimental and clinical surgical observations of these vessels, together with the clinical relief and return of distal arterial pulsation obtained by vasodilating means, papaverine, local arterial sympathectomy, spinal anesthesia, paravertebral block, and lumbar sympathectomy, point toward this being a pernicious action amenable to treatment which may improve the outlook for circulatory restoration and obviate the necessity for embolectomy.

TABLE I.

Site of Embolus	No. Cases	Per cent
Lungs	113	1.8
Kidney	74	1.2
Spleen	60	1.0
Brain	32	.52
Extremities	15	.24
Intestines	16	.1
Liver	1	.016

TABLE II. PERCENTAGE DISTRIBUTION OF PERIPHERAL EMBOLI

Site	Dickinson (15)	De Takats (16)	Key (3)
Aorta	4.5	10.1	4.5
Iliac	17.0	18.3	17.3
Femoral	5.5	39.1	54.5
Popliteal	11.0	9.8	11.3
Axillary-brachial	12.0	16.0	11.8

Gangrene, usually of the dry type, is the end result of clinically significant peripheral emboli. Due to the excellent collateral circulation of the arm, it is not commonly found here, but where the circulation cannot be restored by embolectomy or by the release of vascular spasm permitting adequate collateral circulation, gangrene is the usual result. This of course necessitates amputation which is often fatal due to the poor condition of the patient as a result of the primary condition and the usually advanced age.

Site of the Embolus

Vascular emboli may lodge in any part of the body. According to Bull,[3] in a study of embolic incidence in 6,140 autopsies, only the intestines and liver showed less of an incidence than the extremities (Table I).

It is noted that the lungs were most commonly involved as would be expected with the much greater probability of occurrence following thrombophlebitis or phlebothrombosis. However, it is not likely that these figures reflect at all the true incidence since the relative care in searching for them varies, and the liklihood of detection is much greater in the case of the brain, spleen and kidneys where much more meticulous search for pathology is made. As shown, the extremities were involved in .24 per cent of all autopsies.

A peripheral embolus usually lodges at the site of an arterial bifurcation where there is a definite decrease in the size of the distal branches. The lower extremity is involved seven times as often as the upper. Table II shows the percentage distribution of emboli in the more important locations as determined by several investigators.

Symptoms

Considerable variation occurs in the initial manifestations of peripheral embolism. Key[16] states that the onset is usually one of sudden pain in the extremity, but from numerous other descriptions it becomes clear that while pain of maximum severity at the outset is probably most common, it is by no means invariable. McClure et al[27] state that premonitory distress may be due to small emboli, not incapacitating, or to the movement of one which has straddled a bifurcation without being large enough to close either branch totally and which later slips into one or the other, causing major symptoms. Johnson[14] states that the initial distress may vary from a numbness to an acute pain, followed later by coldness, tingling, stiffness and paralysis or paresis. Dickinson[8] in reporting five cases stated that four had only slight pain at the onset but that all cases complained of numbness and inability to use the extremity as the first symptom. Rykert et al[41] in a series of thirty-six cases found pain to be initial in 64 per cent. It was of maximum severity at the onset in 53 per cent, the others complaining of minor distress becoming maximal after an interval. Of the latter 47 per cent, pain, numbness and coldness coincided in six cases, while in the remainder the onset produced numbness and coldness followed later by pain.

The course of symptoms is usually that of the pain, numbness, and tingling lasting from twenty-four to seventy-two hours, followed by the lesser distress of ensuing gangrene or by the picture of vascular insufficiency. These latter are dominated by an ischemic neuritis with paroxysms of pain over large areas of no particular nerve distribution, vasomotor changes, hyperesthesia, coldness and intermittent claudication, and occur in those cases with sufficient collateral supply to prevent gangrene but not vascular insufficiency. Volkmann's contracture may be a sequel of this course of events.

The mechanism of pain production is of considerable interest. Two distinct factors are involved and determine the nature of its initial manifestation. Where pain is maximum at the onset it appears to be due to reflex vascular spasm from irritation of the endothelium by the lodging embolus. This pain is sudden, very distressing, aching, and is located over the site of the embolus. The origin of this pain is suggested in its response to measures for the relief of vascular spasm such as papaverine, paravertebral block, and lumbar sympathectomy as well as observations of the spastic state of the involved vessel.

On the other hand, Lewis[19] has nicely shown the part played by ischemia in the production of pain following arterial occlusion. This pain is due to ischemia of somatic musculature. It is not found in the occlusion of vessels serving organs without striated muscle, such as the brain, lungs or spleen. It starts first as a numbness, tingling and coldness with pain occurring later, located principally in a position distal to the level of the actual obstruction. It occurs about thirty minutes following the occlusion, depending on the muscular activity of the extremity involved. This pain is not affected by relief of spasm except insofar as spasm release provides sufficient improvement in the collateral circulation to relieve the ischemia.

Study of the mechanism of pain therefore has pointed the way to the most effective medical measures of treatment available and offers some hope for the satisfactory treatment of a few cases without surgery. This will be further discussed under treatment.

Signs

On physical examination the earliest signs are those of pallor, loss of arterial pulsation and temperature reduction. Pallor is early of a waxen hue, or it may be a marbling. Later it becomes a blotchy cyanosis which comes to show the demarcation limited by collateral circulation. Loss of arterial pulsation is most important in diagnosis and determination of the site of the embolus. Usually the site will be found to be at the bifurcation above the level of loss of pulsation. This, however, may be confusing because, as Agar[1] points out, a long or propagating embolus may show pulsation in the mass at some distance below the lodging place. Thus in common femoral embolus it is possible to have a pulsation below Poupart's ligament. Temperature change, coldness, is a sign as well as a symptom. It, too, is important in diagnosis and is generally easily recognized by gross examination. Skin thermometry is not necessary although it may aid in the determination of the line of demarcation.

Within a short time diminished muscular power leading to paralysis supervenes. With it there are diminished sensory findings with diminution or loss of reflexes. Anesthesia of the stocking type below the site of the embolus may be found.

Several hours after the onset the clinical picture may be confused by the appearance of secondary venous thrombosis. This will cause a tendency to swelling and localized tenderness of previously empty veins.

Gangrene will appear in the cases with untreated or unsatisfactorily restored circulations in degree dependent on adequacy of collateral circulation. This depends on a number of factors including the age of the patient with the varying degrees of arteriosclerosis in possible collateral vessels and the adequacy of the general circulation. In animal experiments Melzner (quoted by De Takats[7]) has shown that where the collateral arterial pressure below the site of ligation is less than 15 millimeters of mercury thrombosis and gangrene result. The incidence of gangrene in reports varies considerably, with marked decrease under modern methods of treatment, both medical and surgical. McKechnie et al[28] reported an incidence of 45 per cent gangrene in a series of forty-six cases of emboli seen over a ten-year period. In this series the age factor is shown in that the incidence was 73 per cent after the age of sixty, and 32 per cent in younger patients.

Differential Diagnosis

While the diagnosis of embolism may be clear cut, difficult or impossible, it is not usually troublesome although at times some confusion may enter. The relatively sudden onset of the described symptoms and signs in an individual with the usual underlying causes should make one immediately suspicious of the possibility. Where the onset is not so abrupt, more difficulty may be encountered. Arterial spasm without embolus may produce a similar picture but this is practically always on a basis of trauma, the history of which can be elicited. Primary arterial thrombosis can also produce this syndrome but practically never occurs above the popliteal, ulnar or radial arteries, and smaller artery obstruction is usually cared for by adequate collateral circulation. Assisting in its elimination is the elicitation of a history of long-standing symptoms of coldness, numbness, intermittent claudication, cramps, and paresthesias months or years before complete obstruction of gradual onset occurs in an individual with arteriosclerosis, often diabetic.

Thrombophlebitis should not be confusing, the local pain and tenderness, the cyanosis, the peripheral edema and increased temperature and the presence of arterial pulsation usually sufficing to identify it. Occasionally in phlebitis the arterial pulse may temporarily disappear due to vascular spasm. Also, the secondary venous thrombosis following arterial occlusion must not be allowed to confuse the picture. Buerger's disease likewise exhibits a clinical picture which is usually not difficult of differentiation although sudden occlusion may be the first symptom.

Arteriography has proved of very little assistance in diagnosis. It may help in locating the site of an embolus, but it is not a practicable procedure and is not considered necessary because the embolus nearly always is to be found at the bifurcation above the level of the physical findings.

Treatment

As McClure et al[27] state: "Because of the urgency of the situation, early diagnosis and prompt decisions are essential. As in perforated ulcer and many other surgical conditions, the number of hours after onset is one of the chief factors affecting the prognosis." Before the use of anticoagulant therapy with or without surgical intervention, this was so true that, by some, embolectomy was considered useless after ten hours. More recently, assisted by the anticoagulants, surgery has accomplished a marked improvement in results, even in cases where treatment was delayed, and embolectomy where indicated can now be done with a far greater promise of success than formerly. "It is never the operation which kills the patient but the disease which makes the operation necessary" (Griffiths[9]).

Medical treatment is always justifiable at the start but should not be carried on alone more than the few hours which will suffice to determine its effectiveness. Relief of pain is effected by opiates, which should not be withheld. The position of the extremity may be important. Formerly it was considered wise to elevate it, but more recently has been accepted the practice of lowering it 10 to 15 degrees to assist the collateral circulation by gravity (De Takats[7] and Barker et al[2]). Whisky has been advocated by Barker et al[2] in doses of 1½ ounces every four hours. It is a good vasodilator. Probably more effective for relief of reflex spasm is papaverine which has come into use in the last decade. After it had been shown that atropin was useless, Denk[5] tried papaverine intravenously in a patient fourteen hours after the onset and noted about thirty minutes later by capillary microscopy a dilatation of vessels which lasted about three hours. Repeating the injections, he observed that after the fourth injection the vessels remained open. He reported ten cases in which it was used, in six of which he obtained good results and in four of which the outcome was not a success. On the other hand, Griffith[9] reports unsatisfactory results from the use of papaverine. No well-controlled series throws any light on its real value, but it seems fair to assume that if results are to be obtained, it will be determined by the result of a single intravenous injection of one-half to one grain of papaverine hydrochloride intravenously. If no restoration of circulation results within an hour, it should be regarded as ineffective.

Sympathetic block has been advocated by Barker et al[2] if papaverine is ineffective. Roome[40] reports the prompt and complete relief of pain following such treatment in two cases, but except for casual mention, it has few champions. Probably it deserves a better trial than it has been afforded, since the results can be evaluated in a short time if papaverine is found useless.

These medical measures deserve carefully observed trial, and since not more than an hour or two need elapse before an adequate evaluation of their results is possible, their use is well justified. In all cases the surgeon should be immediately called and preparations for operative treatment made ready. Where medical measures are unsuccessful, restoration of circulation is possible only by embolectomy. Due to relatively recent introduction of measures to relieve vasospasm and prevent coagulation, the literature dealing with arterial embolism is predominantly surgical. While it is obvious that there is a greater tendency to report good results than poor ones, and while there are no large series of embolectomies performed by one surgeon, sufficient reports are available to establish beyond doubt the effectiveness of the surgical approach in saving lives and limbs. It is not the province of this paper to deal with the technical aspects of surgical treatment which are adequately covered elsewhere.

In 1943, 690 cases with embolectomy were gathered by McClure et al[27] in a comprehensive review with results that are definitely encouraging. As pointed out by Lund[40] the experience of the surgeon in this work is of great importance and it would serve greatly the general results obtained if this work could be concentrated in the hands of one or two surgeons in a community. Lund[24] showed that in a period of six years following the first embolectomy at the Boston City Hospital in 1925, he could divide experience into two periods of three years each. These showed materially improved later results in the second period due entirely to improved skill. In the first three years he had 25 per cent successful results and a 67 per cent mortality, whereas in the second three years he showed 46 per cent successes and 27 per cent mortality. Where the legs only were involved, the earlier group showed 18 per cent successes and 64 per cent mortality, while the latter showed 55 per cent successes and 22 per cent mortality.

In a series of twenty-nine cases without operation, 8 per cent recovered and the mortality was 85 per cent. These figures speak for themselves.

Regardless of experience of the surgeon it is agreed that the most important factor leading to success is the reduction of the interval between onset and operation. Johnson[14] states that results are poor after ten hours, nil after forty-eight hours. Dickinson[8] says they are good under eight hours, poor after twenty-four hours. Agar[1] reports a "reasonable" chance under six hours, with recovery rare after twelve hours. McKechnie et al[28] would avoid delay over three hours, obviously difficult to prevent. Lund[24] reported no successes after nine hours. Murray[31] in an early report of nine successes out of seventeen cases showed that eight of these were in patients operated under six hours. Key,[16] in reporting 382 collected cases with 22.5 per cent good results, found that among those operated upon under ten hours, the outcome was successful in 55.8 per cent. Danzis,[4] in estimating the influence of the time interval between onset and operation on the outcome, found that under four hours 62 per cent showed restored circulation; from four to eight hours, 50 per cent; from eight to twelve hours, 25 per cent; and from twelve to twenty-four hours, 21 per cent. He found no authentic report of success after forty-eight hours, explaining any such successes on probable collateral circulation development.

The foregoing results are those obtained without the use of anticoagulants and comprised the great majority of reported cases up to this time. A new chapter in treatment seems to have been added with the introduction of heparin, which will be discussed later.

While the importance of early diagnosis and treatment cannot be too strongly stressed, it is recognized that very occasionally results may be obtained in cases with delayed operation so that the opportunity should not be denied on that basis alone, especially with the anticoagulants available.

The risk of surgery is relatively small in these cases even though the patients are often very ill and not infrequently quite old. While mortality following operation is not insignificant, it is so much better than in non-interference that operation is rarely contraindicated even though the risk seems grave. Emphasized by McClure et al, Pemberton[37] states, "There is no established operative procedure of equal simplicity, frought with so little risk, with such dramatic potentialities, that has been so woefully neglected as embolectomy." Choice of anesthesia is not difficult. Danzis[4] states that the type of anesthesia is noncontributory to the outcome. Considering the gravity of the underlying disease, it is difficult to accept that without reservations. Local anesthesia, however, is favored by most authors. Regional or block anesthesia was advocated by Danzis. Spinal anesthesia has been recommended by some, but opposed by others because of the hypotension which will further impair an already diminished circulation.

Multiple operations have been necessary in a number of patients who had recurrent emboli, and they have been well tolerated. That recurrent embolism should be treated surgically is well supported by the several cases reported in whom the tendency to embolism stopped and recovery ensued.

The use of anticoagulants has divided the history of treatment of arterial emboli into two periods, that before and that after their introduction. Dicoumarol is too recent to judge its value adequately but the results, in conjunction with heparin, are promising. Heparin, however, has been an outstanding boon to the vascular surgeon, and the results obtained have established its place in therapy. Practically all reports of cases operated upon since 1940 indicate the use of heparin. Discovered about 1916 by Howell, it was not until about ten years ago that a sufficiently purified solution was prepared for satisfactory clinical use. Widely distributed in body tissues, especially lung and liver, its action in the body is probably that of an antiprothrombin. Large amounts of it are liberated in anaphylactic shock making the blood incoagulable for long periods. Its fate in the body is unknown. Experimentally its value in vascular disease was suggested by the results of Murray and Best[33] who found the removal of experimental emboli from dog arteries was always followed after twenty-four to seventy-two hours by thrombus formation plugging the artery, whereas this was prevented in all cases by the use of heparin. Clinically they report an unfavorable case in which operation was undertaken twenty-five hours after the onset of symptoms involving both common iliac and femoral arteries. Removal of the emboli revealed "some stickiness of intima," but with heparin circulation was restored. The patient died on the fifteenth postoperative day, and autopsy revealed perfectly healed vessels. These authors suggest the use of heparin in inoperable cases to prevent further extension of the thrombus and preserve the maximum amount of collateral blood supply. Broth[11] reports a case of tumor (sarcoma) embolus in which he had to reopen his incision four times because of thrombolic plugging of the artery after closure. The fifth clearing of the artery was associated with heparin therapy, local and general, and recovery resulted. Numerous other authors have since attested to the value of heparin in conjunction with embolectomy.

Heparin is administered intravenously. Some workers insist on its continuous administration in an amount sufficient to keep the coagulation time at fifteen minutes, usually requiring a flow of 25 to 30 drops per minute of a saline solution containing 100 milligrams of heparin to 1,000 cubic centimeters. The coagulation time should be tested every few hours to determine the rate of administration. Lesser[18] advocates the use of 100 milligrams of heparin every three hours to avoid the large amounts of fluid given when the continuous flow is used. He states that at the end of three hours the coagulation time is still satisfactorily prolonged. This suggestion has merit, especially in those cardiovascular patients who should have a restricted fluid intake.

Dicoumarol will probably have an important place in therapy in association with heparin. Of recent introduction, few reports are available. Wetherell[42] reports four cases in which it was successfully used. Barker et al[2] report six cases with good results, one patient dying of heart failure as the result of an underlying myocardial infarction. Where used, the dosage must be guided by the prothrombin time, considerable care being exercised to avoid overdosage which may otherwise result. Its disadvantage lies in its delayed action, forty-eight hours or more being necessary to determine how high the prothrombin time will go, and in the marked variability in its action on different patients. Its great advantage lies in its being given by mouth. Heparin is always used with it at the start and discontinued in about forty-eight hours or when the prothrombin time reaches 20 to 30 per cent of normal.

Considering the foregoing, a suggested program of treating arterial emboli is presented:

1. Treatment must be started immediately.
2. Room temperature of 80° to 85° F. is used. Heat is to be avoided.
3. Lower the extremity and wrap in cotton.
4. Give 1 ounce of whisky every three hours.
5. Administer papaverine ½ to 1 grain intravenously.
6. If circulation is not restored in one hour, sympathetic block may be tried.
7. If sympathetic block is not effective, embolectomy is performed following the administration of heparin.

Results

While the results of the surgical approach in the treatment of arterial emboli predominantly attest to its value, consideration must be given to those dissenters who have not been impressed with it and mention must be made of passive vascular exercise as developed by Reid and Herrmann. Rykert et al[41] found embolectomy unsatisfactory and reported 50 per cent restoration of circulation by passive vascular exercise. They advise against embolectomy. Linton,[22] in fifteen cases treated by passive vascular exercise, was able to save the circulation in nine. Lund,[23] in considering the latter, finds no justification for it, but Linton[22] believes it may be of use following embolectomy. There is, therefore, insufficient data to indicate that passive vascular exercise is to be seriously considered. Undoubtedly there are cases with unusually good collateral circulation where medical measures might save an extremity, but too often the latter will leave a vascular insufficiency with ischemic symptoms and signs which might be avoided with modern surgical approach.

The earlier reports of surgical treatment show a considerable variation in results, possibly reflecting in part the variations in experience, surgical ability and individual factors in the patients contributing to success or failure. As previously stated, for a long time embolectomies were reported only by the Swedish workers. In 1921-1922 Key[15] quoted thirteen successes out of forty-five cases. The first embolectomy in Great Britian was reported in 1925, and up to 1934 only twenty cases had been reported there, with 50 per cent success. Key's review[16] of 382 Swedish cases to 1936 showed 59.4 per cent mortality, 22.5 per cent good circulatory results, and 18.1 per cent recoveries after amputation. If only the cases operated upon under ten hours are included, good results were obtained in 55.8 per cent. Nystrom (quoted by McClure et al[5]) reported that of thirty-nine embolectomies performed in one clinic, about half were followed by satisfactory circulation. Griffiths, reporting fifteen years' experience to 1940, had eleven successful results in twenty attempts. Four of these successes involved the arms.

Late studies of surgical results are not common, making the report of Strombeck[42] on late results especially interesting. His collection of 372 Swedish cases showed early results comparable to those of Key.[16] Following these through he states that of the successful results three-fourths of the patients were alive at the end of a year, one-half at the end of three-years, one-third at the end of five years, and one-eighth at ten years. Key,[16] reporting results on forty-eight cases from one hospital, states that most were alive at two to three years, one-third alive at ten years and two were alive after fifteen years.

The American reports have been on the whole less favorable. As late as 1942 Dickinson[8] reported five deaths out of six patients, following embolectomies, four of which were after a greater than ten-hour interval. Out of three cases, Massey and Steiner[26] had two recoveries, in both of which operation was performed within three and one-half hours. Linton[22] reports only four recoveries out of twelve patients. Rykert et al[41] had an unsuccessful experience with eleven embolectomies. They state that they had 20 per cent recovery on symptomatic therapy and did not advise embolectomy. Zierold[44] reported 87 per cent mortality in eleven surgical cases as against 72 per cent in the non-operative cases. Koucky et al,[17] reporting twenty-five cases at Cook County Hospital between 1928-1938, had three embolectomies with three deaths. On the other hand, McClure et al[27] had three successful embolectomies in eight patients. Lesser[18] reported four successful surgical results in three patients after intervals of four and one-half, twelve, thirteen and fourteen hours. Griffiths'[9] series of five patients who were operated upon showed three successful results. One of these, after a seventeen and one-half hour interval, developed an ischemic contracture. Murray[31] reported seventeen operations in a series of thirty peripheral emboli. Nine of these patients made good recoveries (eight were operated upon under six hours), while eight had the circulation restored but died of other causes, some embolic. Lund's experiences[24] at Boston City Hospital, fifty-five peripheral emboli in seven years, showed no successes after nine hours had elapsed. Among those not operated upon, 8 per cent recovered while 35 per cent of twenty-seven operated upon recovered.

While these results stress the value of early operation, the reported satisfactory outcomes[13] after thirty-nine and twenty-seven hours without anticoagulants, show that delay alone does not contraindicate surgery, even though the chance of success is small.

The most significant era of surgery in arterial embolism seems to have been opened in the last few years with the introduction of anticoagulants as adjuncts to surgery, and the few reports available show a marked improvement in results from embolectomy. It has been possible to collect fifty-two cases in which heparin has been used, a few in conjunction with dicoumarol. Fifty recoveries are reported. While controlled series are not available, the reports leave little doubt as to the results. Among the earliest advocates of heparin therapy, Murray and Best[33] in 1938 reported five embolectomies with four recoveries. In 1940, Groth[11] reported a case in which a sarcoma tumor embolus was removed from a femoral artery in which thrombus occlusion occurred at the site of and immediately after closure of the artery four times. Following the fourth thrombosis heparin was used locally and intravenously and a satisfactory result was obtained. McFarlane[25] reported a case of mitral stenosis in which four successive emboli were treated surgically and heparinized with good results, after which no further episodes occurred. Lindgren and Wilander[20] reported eight embolectomies with seven successes, in one of which operation was performed after a four and one-half day interval. Ravdin and Wood[38] described a successful operation on a saddle embolus of the bifurcation of the aorta.

Lesser,[18] using 100 mg. of heparin every three hours reported four successful operations following four and one-half, twelve, fourteen and thirteen hour intervals. Murray[34] described seventeen embolectomies in which the circulation became and remained normal in all. This is the most impressive series of heparin treated embolectomies. Later he[35] described five consecutive successful aortic embolectomies. One of these was especially interesting in having three other emboli, two femoral and one cerebral, with recovery from all. The recurrences all came several days after heparin associated with previous operations had been stopped. Two of his patients developed further emboli in spite of heparin and died.

Reported from so many diverse authors, these results of embolectomy with heparin treatment are remarkable in comparison with the earlier results reported.

Report of Cases

The following experiences with peripheral arterial emboli at Ancker Hospital, St. Paul, have prompted the present discussion of the subject.

Case 1.—Mrs. E. G., aged seventy-seven, with diabetes and congestive heart failure, was admitted to the hospital three days after the onset of pain in the left leg, with absent femoral pulsation in a cold, white leg. She was moribund and died forty-eight hours later.

This patient is obviously an example of neglect in early care and in her moribund condition not a subject for embolectomy.

Case 2.—Mrs. A. G., aged sixty-four, with hypertensive heart disease and auricular fibrillation, was admitted to the hospital with severe pain of sudden onset in the left leg of twenty-four hours' duration. The leg was cold with blotchy cyanosis and no pulsation below the femoral artery. Embolectomy was suggested thirty hours after onset but refused by the surgeon. Amputation one week later was followed by gangrene in the stump and death occurred after one month.

While this was a comparatively late case, embolectomy should probably have been attempted.

Case 3.—Mrs. W. C., aged sixty-one, with rheumatic mitral and aortic valvular disease, was in the hospital convalescing from congestive heart failure. On April 30, 1941, she was awakened with severe pain in the right foot followed by numbness of the leg with coldness, pallor and marbled cyanosis. No arterial pulsation in the femoral artery or lower could be elicited. A line of demarcation appeared below the knee. Symptomatic treatment was given. Death occurred nine days later. Autopsy showed thrombus formation in the right external iliac artery and the left auricle.

This case offered a favorable opportunity for embolectomy which should have been tried in the absence of response to symptomatic therapy.

Case 4—Mr. F. A., aged fifty, with no significant history, was well until the onset of a diarrhea three days before admission to the neurological service on June 5, 1943. Three hours before admission, pain of gradual onset appeared in the right hip, progressing to an excruciating character. On admission the leg was cold, paralyzed and the pulses not felt. A diagnosis of embolism was made, but a surgeon was not consulted. Nine hours later he developed severe lower abdominal pain with diarrhea and died nine hours later. Autopsy showed thrombosis of the common iliac artery extending 6.5 centimeters into the aorta. There was also a purulent pericarditis and pyelonephritis.

Here again was a case where clinically the indications for surgery were present. The general condition as revealed at autopsy would doubtless have prevented recovery, but they were not diagnosed antemortem.

Case 5.—Mr. J. L., aged fifty-nine, with history of a stroke in 1939, was admitted October 21, 1941, to the surgical service with severe pain of sudden onset and coldness of the left leg of two days' duration. Surgery was not considered, dry gangrene resulted and supracondyloid amputation was performed November 4, 1941. The patient died one week later. Autopsy showed marked coronary disease with left ventricular mural thrombus, and the pathologist considered the leg lesion to be thrombotic.

The relatively late appearance of this case mitigated against a successful surgical result, but it probably should not have been considered hopeless.

Case 6.—Mrs. A. B., aged sixty-two, was admitted to the hospital June 1, 1939, with a history of hypertensive heart disease with decompensation. Twenty-four hours before admission she experienced pain in the right foot, followed by numbness and shooting pain in the leg. Examination showed congestive heart failure and numbness and coldness in the right leg below the inguinal ligament. Pulse, which was felt in the femoral artery, stopped 2 inches below the inguinal ligament. Surgery was not considered, and symptomatic therapy (including papaverine) was unsuccessful. Death resulted June 28, 1939. Autopsy revealed rheumatic mitral endocarditis and occlusion of the right common iliac artery.

Again, while twenty-four hours elapsed before seen, this patient might have benefited by surgery. The occlusion when first seen was below the level of the inguinal ligament, being later propagated proximally to involve the common iliac artery.

Case 7.—Mrs. J. E., aged twenty-six, a hospital patient with pulmonary tuberculosis and rheumatic heart disease, on August 22, 1940, complained of severe pain in the right leg, alternating with numbness. The leg was white and waxy. Surgery was not considered, and death occurred twenty-four hours later. Autopsy was denied.

This was the second case in which recognition of the embolus was possible almost immediately after the lodgement, and the patient was probably a likely candidate for surgery. The tuberculosis did not appear to be a contraindicating factor.

Case 8.—Mrs. H. L., aged seventy-six, with a diagnosis of coronary arteriosclerosis and cardiac decompensation, was admitted to the hospital six hours after the onset of pain in the left hand, followed by coldness and pallor in the arm, with no arterial pulsation in the axillary artery or distally. The surgeon was not consulted. She was treated symptomatically and died sixty hours later. Autopsy was denied.

This patient would probably not have benefited by operation in view of the failure to live longer than sixty hours following admission. Seen early, however, she should probably have had the opportunity of attempted embolectomy.

Case 9.—Mrs. J. O. D., aged thirty-five, was well until admission for a stabbing pain in the rectum and lower back, the onset of which was twelve hours before she was seen. This pain radiated to the back of both legs and was associated with numbness, coldness, paralysis, absent femoral pulsation, and mottled discoloration of the left leg to the knee. After a short period of improvement of the heart and general condition, she pursued a downhill course to death in two weeks. Autopsy showed a left common iliac occlusion, mitral stenosis, recent myocardial infarction and ventricular mural thrombus.

This patient in retrospect appears to have been a good candidate for embolectomy when first seen. Operation was apparently not considered.

Case 10.—Mr. M. D., aged seventy, with no significant history, was admitted two weeks after the sudden onset of a severe pain in the right leg which later turned blue and cold. A line of demarcation was present below the knee. He had coronary heart disease with auricular fibrillation. Death occurred twenty-four hours after admittance. Autopsy was refused.

This patient was obviously not a candidate for surgery.

Case 11.—Miss E. E., aged seventy-six, with mitral stenosis and auricular fibrillation, had had a severe pain in the right arm three weeks before admission, followed by inability to use the arm. One day before admission she had a similar severe pain in the left leg. No pulsation was found in the right axillary and left popliteal arteries and tributaries. Severe pain persisted in the leg and arm. Operation was not considered. Symptomatic treatment was used, and the patient died one month later after a gradual downhill course. Autopsy was denied.

This patient did not develop gangrene, and it is difficult to determine the effect of the emboli on the outcome. It is likely that an operation would not have altered the clinical course, but embolectomy might have added much to her comfort. Indications for surgery must be regarded as questionable in this case.

Three cases of gangrene were noted in the records in which emboli may have been the etiology. In one of these there was thrombosis of the aorta and common iliac arteries while in another there was thrombosis of the external iliac artery. In all three the clinical histories could have been interpreted as indicating embolism.

A review of this unimpressive collection of failures in treatment reveals several deficiencies which are not uncommon where the profession is not alert to the problem. Delay in admission is not always the fault of the physician, but it is not uncommonly so. One patient was obviously not amenable to treatment, having been admitted two weeks after the onset. Two patients were admitted after two to three days' delay; three were admitted after an interval of twenty-four hours. In the light of earlier experience these would not have been considered good candidates. On the other hand, two patients developed their emboli while in the hospital, and three were seen after intervals of three, six, and twelve hours respectively. These should all have been considered for surgery. A more serious indictment, however, is the lack of consideration of the surgical approach. In only one case was the surgeon asked to see the patient and in this he advised against surgery. In only one case was the patient admitted to the surgical service, and that after an interval of twenty-four hours. Operation was not considered. In all other cases the patients were admitted to non-surgical services and operation was never considered. First among the lessons to be gleaned from this study, and important if nothing else is learned, is the fact that the profession is insufficiently alert to this problem and much may be gained by intelligently directed dissemination of information in this direction.

Discussion

Location of an embolus necessitates certain considerations in treatment. Greater risk than is apparent may be associated with involvement of the popliteal artery because of the danger to the collateral circulation about the knee. Special consideration to emboli in the arm is necessary because of the better collateral circulation available. It is believed by several (Lund, DeTokats) that operation in an upper extremity is seldom indicated. Lund's analysis[24] showed that embolectomy in the arm is twice as likely to be successful as in the leg although the ultimate results, as far as life is concerned, show little difference if no operation is performed. Gangrene did not occur in Lund's non-operative cases, doubtless influencing greatly his opinion. Gangrene, though infrequent, does, however, occur in the upper extremity and there must be considerable doubt as to the wisdom of non-operative treatment in the arm if medical treatment over a short time is not successful.

Embolism in the aorta deserves special recognition because of its serious implications when not operated upon and because of the promising results from operation. Spontaneous recovery is rare but has been reported. In 1921 Hesse[12] collected a series of forty-two cases, the embolus being located at the bifurcation in twenty-five cases, in the abdominal aorta above the bifurcation in twelve, and in the thoracic aorta in two. Sudden death was rare, over half living a week or more. Griffith[9] in 1938 collected reports of 128 cases, twenty-seven with operations and nine successes. The latest available collection is that of McClure[27] in 1943, who found seventeen successful cases. The most impressive group is that of Murray,[35] who reports five successful cases, in all of whom heparin was used. There is some difference of opinion as to the surgical technique, but the consensus is that the extraperintoneal abdominal approach is advisable. With a prepared surgeon at hand, the treatment of aortic embolism at the present time appears promising.

The recent report of Barker et al[2] in which medical treatment is advocated and a series of six consecutive recoveries reported, with no failures, is extremely interesting. Nothing approaching this has been reported elsewhere, and their recommended regime, which is essentially that advised earlier in this paper (except that they would wait twelve hours for relief or spasm), certainly merits trial. These patients had waited as long as twenty-four hours before therapy was started. It must be noted that the authors did not claim that recovery meant an entirely normal circulation, for usually persistent impairment or absence of arterial pulsation or evidences of mild to moderate arterial insufficiency with ischemia remained. Function, to a degree only, was restored in all. Such limitation of response must temper one's enthusiasm for medical treatment especially in view of the good results, as regards adequate circulation, reported by Murray.

Further experience with surgical approach assisted by heparin and dicoumarol will indicate how long it is safe to risk medical treâtment. It would seem possible to determine the results of antispasmodic therapy within a few hours' time, placing less of a risk on the surgical treatment when it becomes necessary.

Summary

The complete failure to save a single life in the complete series of eleven cases of peripheral arterial emboli in a large municipal hospital over a period of thirteen years is analyzed.

The factors predisposing to unsatisfactory therapy are:

1. Failure in calling early medical attention.

2. Lack of prompt hospitalization and medical care when first seen.

3. Lack of general awareness of medical treatment on the part of the general practitioner and internist who see the cases first.

4. Lack of awareness of the satisfactory results which surgery can provide.

5. Lack of surgeons properly trained and interested in this problem.

A review of broad cross-section of experience with this problem is given.

A plan is outlined for the treatment of peripheral arterial occlusion that promises much more successful results in these cases than have been heretofore obtained.

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Discussions

Dr. A. A. Zierold, Minneapolis: It has been extremely interesting to hear this excellent review of a subject which should be of considerable interest to everyone.

Dr. Borg has stated that peripheral arterial embolism is much more common than we are led to believe. I believe this statement can be borne out by each one's personal experience if carefully recorded. Some years ago, at the instigation of Dr. George Fahr, I became interested in arterial embolism and in the course of about eighteen months collected twenty-eight cases which were treated surgically and which were reported. During the years following, I have accumulated fifteen or sixteen more. As my interest has subsided, I have seen fewer and fewer cases. The basis for any remarks which I may have to offer is this personal experience.

All of the cases to come under my observation were secondary to some cardiac disorder and the arterial embolus was in each instance a fragment of some cardiac thrombus. Following the lodgment of an embolus at some narrowed point in the artery, usually a major bifurcation, what is called a secondary thrombus develops. Properly speaking, this is not thrombus but intravascular clotting, which is characterized by the appearance of fibrin threads. It is this long distal clot which most often defeats any surgical procedure. As Dr. Borg has stated, it is common experience that the majority of arterial emboli lodge in the lower extremity at the bifurcation of some major vessel. The diagnosis of peripheral arterial embolism is relatively simple. The cardinal points Dr. Borg has emphasized. The difficulty in treatment is to impress on the house staff the necessity for early diagnosis. When gangrene becomes evident, treatment is limited to amputation. There are several methods of determining the location of a peripheral embolus and the extent of the damage incurred. Of these, I believe the best to be palpation of the affected vessel itself. Irrespective of oscillometer readings, color or temperature changes, a peripheral embolus can be located definitely by the following rule: If a peripheral arterial embolus exists, it will be found at the first major bifurcation above which there is pulsation. For example, if a femoral pulse can be felt above the profunda femoris but not below, the embolus will be found at the union of the profunda femoris with the main trunk.

The prognosis in the surgical treatment of embolism is dependent upon two factors, elapsed time following onset and the degree of occlusion of the vessel following the lodgment of the embolic mass. If the artery is suddenly and completely occluded by an embolus, no clots, either proximal or distal, will form. If, however, the vessel is incompletely blocked and there is a leakage about an irregularity of the embolus, a long tail-like clot will form which cannot be removed from the distal portion of the artery. In either event, the shorter the elapsed time the better the prognosis. In occlusion of the major vessels of the upper extremity, it has been my experience that surgical treatment has not been necessary. Likewise, emboli at the bifurcation of the popliteal vessel, if untreated, rarely result in gangrene. If gangrene does develop, it is unusual that more than the tips of the toes are lost. In my hands, the surgical treatment of emboli at this point is no better, if as good, as medical treatment. In my own cases, 75 per cent survived operation but of all the cases only 30 per cent maintained adequate circulation through the affected vessel. It is probable that, with a careful use of heparin, dicoumarol, and papaverine, this figure will be considerably increased.

Dr. Moses Barron, Minneapolis: Dr. Borg presented a very interesting paper on the embolic phenomena in peripheral blood vessels. He showed that we cannot be too optimistic about the results of present-day treatment although the use of anticoagulants seems to have improved the results. My experience with this type of case is very small. In two cases in which I was associated where embolectomy was performed, both patients died. In one case treated medically, the patient survived. This patient had been seen several weeks previously, and she was suffering with an advanced case of heart failure. One day I was called and informed that the patient had suddenly developed pain in one leg with resulting numbness. She was sent to the hospital where I saw her about twelve hours after the onset. I gave her papaverine subcutaneously, applied warmth and raised the head of the bed about 12 inches. The foot appeared cold and the patient could not move either the foot or toes. She appeared very weak, almost in shock. She complained of pain in the foot especially at night. The next morning when I saw her the leg had turned a grayish cyanotic color and this at once showed the seriousness of the condition. The next day blotches were scattered over the leg from the knees downward and the line of demarcation was present around the leg just below the patella. I had been in Toronto several weeks previous where there was presented a method of treatment of peripheral vascular disease which appeared to be promising. Since the method caused no serious reactions, I decided to try it on this patient. I mixed 25 c.c. of ordinary anesthetic ether with 1,000 c.c. of normal saline and added 150 mg. of niacine. This mixture was given intravenously very slowly so that it would take at least two hours to run in. The next morning the leg appeared definitely better; on the second day after the treatment the discoloration had completely disappeared and only faint blotches remained. The patient was feeling better. The blocking of the artery appeared to be just below Poupart's ligament at about the bifurcation of the profunda femoris. No pulsation was evident anywhere below this point. She was given twelve daily injections, then a rest of a week and then another dozen injections. The change in the circulation was most striking. The color of the leg returned to normal, she was able to move the foot and wiggle the toes. However, no pulsation appeared in the arteries. I then started sitting her up with the feet dangling. At first this caused much pain; the length of time of sitting up had to be increased very slowly. Because of the financial status of the patient, I had to send her to the General Hospital for further treatment. Several weeks after her admission there, I was informed by the resident that she was getting definitely better.

This case shows what this type of treatment can do in arterial obstruction. Of course, one does not know the final result yet. I would strongly urge the use of this method of treatment for peripheral vascular disease. Even ulcers seem to respond well to this method. The crust and discharge of ulcers may be cleared up by spraying with ether and applying ether packs on cotton.

Dr. Gordon Kamman, Saint Paul: One of the cases which Dr. Borg mentioned was in Ancker Hospital and on my service. I saw this patient about six hours after the onset of the arterial embolism which, in this case, was in the popliteal artery. It is one of the cases for which the surgeons did not do anything.

I would like to ask Dr. Barron and Dr. Borg what becomes of the embolus when medical treatment is used? Is the embolus dissolved, does it canalize, or does it just seem to vanish?

Dr. Barron: The theory of this treatment is that the injection causes an increase in the collateral circulation. The amount of canalization of thrombosed vessels is often very great. I recently had a patient who developed complete thrombophlebitis of the jugulars on the left side of the neck. She was at the time confined to bed with acute rheumatic fever. She was given dicoumarol for several days and then it was stopped. Subsequently the jugular veins appeared to be back again to normal with apparently a complete absorption of the thrombosis. It is, therefore, possible to have extensive canalization of the clot.

(Continued on Page 447)

◆ Reports and Announcements ◆

AMERICAN ASSOCIATION ON MENTAL DEFICIENCY

The seventy-first annual meeting of the American Association on Mental Deficiency will be held at the Lowry Hotel, Saint Paul, Minnesota, May 28-31, 1947, inclusive. The association has a membership from the fields of medicine, psychology, education and social work.

All interested persons who are not members are invited to attend. A fee of 50 cents will entitle them to admission to any and all meetings. There will be an open meeting Wednesday night, May 28, in the ballroom of the Lowry Hotel, for which there will be no charge.

Dr. Edward J. Engberg, Minnesota School of Feeble Minded, Faribault, Minnesota, is national chairman on Membership and co-chairman of the Arrangements Committee.

AMERICAN COLLEGE OF PHYSICIANS AND SURGEONS

President of the Minnesota Chapter of the American College of Physicians and Surgeons, a society for general practitioners, is Dr. F. G. Benn, Minneapolis.

Other officers are Dr. A. J. Lewis, Henning, and Dr. Stanley Kucera, Lonsdale, vice presidents, and Dr. A. E. Ritt, Saint Paul, secretary-treasurer. Dr. Charles Donaldson, Foley, is president-elect.

Originated less than a year ago, the American College of Physicians and Surgeons is made up of general practitioners, with its main purpose to inform the family doctor of the practices and problems facing the general practitioner. In addition to the state organization, regional chapters have been formed throughout the state.

Saint Paul Regional Chapter.—Officers of the Saint Paul chapter are Dr. A. E. Ritt, president; Dr. James L. Benepe, president-elect; Dr. E. J. Fogelberg and Dr. C. C. Cooper, vice president; Dr. G. P. Wenzel, secretary-treasurer; and Dr. E. V. Davis and Dr. P. C. Roy, members of the board.

Fergus Falls Regional Chapter.—Organized in October, 1946, the Fergus Falls chapter has as its officers Dr. Edward W. Humphrey, Moorhead, president; Dr. C. H. Pierce, Wadena, president-elect; Dr. S. B. Seitz, Barnesville, and Dr. C. J. Lund, Fergus Falls, vice presidents; and Dr. E. C. Hanson, New York Mills, secretary-treasurer.

CRIPPLED CHILDREN'S CLINICS

Crippled children of Minnesota will have an opportunity for medical examination and advice at eleven district clinics to be conducted by the Crippled Children's Services of the Minnesota Division of Social Welfare, Jarle Leirfallom, director, announced this week.

These clinics, which are a part of the year-round service financed by the federal and state government, are for crippled children and young people under 21 years of age. Vocational tests and advice will be given to those over fourteen years of age.

The schedule for the clinics is as follows:

Worthington, March 29—serving Nobles, Jackson, Murray, Rock, Pipestone, and Cottonwood counties.

St. Cloud, April 12—serving Stearns, Benton, and Sherburne counties.

Austin, April 19—serving Mower, Freeborn, Steele, and Dodge counties.

Thief River Falls, April 25—serving Pennington, Marshall, and Red Lake counties.

Thief River Falls, April 26—serving Roseau and Kittson counties.

Detroit Lakes, May 3—serving Becker, Clay, and Mahnomen counties.

Virginia, May 9—serving St. Louis and Koochiching counties.

Grand Rapids, May 10—serving Itasca and Cass counties.

Brainerd, May 17—serving Crow Wing, Wadena, Todd, Cass, Mille Lacs, and Aitkin counties.

Faribault, May 24—serving Rice, Goodhue, Scott, and Dakota counties.

Morris, June 7—serving Stevens, Pope, Douglas, Grant, Traverse, and Big Stone counties.

Moose Lake, June 14—serving Aitkin, Carlton, Pine, Kanabec, Lake, and Cook counties.

Two orthopedic surgeons, a pediatrician, vocational rehabilitation workers, public health nurse, physical therapists, other nurses, and medical social workers are included on the staff.

The following organizations are co-operating with the Crippled Children's Services in the clinic program: Minnesota-Dakota Orthopedic Society, Northwestern Pediatric Society, Minnesota Public Health Association, Gillette State Hospital for Crippled Children, Division of Vocational Rehabilitation, the Minnesota State Medical Association and the local Medical Society.

MINNESOTA PATHOLOGICAL SOCIETY

The regular meeting of the Minnesota Pathological Society of the University of Minnesota Medical School was held on Tuesday, March 18, in the Medical Science Amphitheater. Dr. A. B. Baker spoke on "Bulbar Poliomyelitis: New Interpretations of the Clinical-Pathological Picture." Dr. M. B. Visscher then spoke on "Physiological Problems in Poliomyelitis."

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular dinner meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club, Saint Paul, on Thursday evening, March 11, 1947.

The following were accepted into active membership: Drs. Philip K. Arzt, Kendall B. Corbin, Donald R. Reader, Marvin Sukov, and Leonard A. Titrud.

(Continued on Page 444)

APRIL 1 2 3 4 5 • 6 7 8 14 15 16 17 18 19 • 20 21 22 23 24 25 26 • 27 28 29 30

MAY 1 2 3 • 4 5 6 7 8 9 10 • 11 12 13 20 21 22 23 24 • 25 26 27 28 29 30 31

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RESEARCH
IN THE SERVICE OF MEDICINE

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

(Continued from Page 442)

Dr. Edmund W. Miller presented his inaugural thesis on "Personality Changes Observed in Prefrontal Lobectomized Patients." Dr. Reynold A. Jensen read a paper entitled "The Emotional Factors in Ulcerative Colitis in Children."

HERMAN JOHNSON MEMORIAL LECTURE

Dr. Frank G. Dickinson, economist and insurance specialist who recently became director of the Bureau of Medical Economic Research of the American Medical Association, has been selected to give the annual Herman Johnson Memorial lecture to the senior class of the medical school at the University of Minnesota.

This lecture, which has been given each year since 1938 in memory of Dr. Herman M. Johnson of Dawson, is provided for in a fund established by the House of Delegates of the Minnesota State Medical Association soon after Dr. Johnson's death in 1935.

The address this year is to be given May 28 at 4 p.m., in the large amphitheater of the medical school on the University Campus.

In view of Dr. Johnson's deep interest in medical economics and social problems, the subject for this lecture and the speaker are usually chosen from the economics field or from the field of public service. Dr. Dickinson is particularly well qualified to give the type of message which this lectureship calls for. Famous for his football rating system which he developed as a hobby, Dr. Dickinson has long been associated with economics—as a teacher, an author and an insurance consultant.

Dr. Dickinson is currently making an intensive study for the American Medical Association of the problem of equalizing the supply of and demand for medical service in this country.

The Johnson Lectureship will be Dr. Dickinson's third appearance in the Twin Cities. His first visit was in 1940 when he came to award the Rockne Memorial trophy to the University of Minnesota; his second, his appearance at the banquet of the County Officers meeting, held in Saint Paul in March of this year.

REPORT OF HOUSE OF DELEGATES AMERICAN MEDICAL ASSOCIATION

(Continued from Page 423)

By and large, having a House of Delegates meeting in the interim between regular meetings of the American Medical Association provides the delegates with an excellent opportunity to concentrate on business affairs without any outside interference or attractions. It is hoped that every physician who possibly can will make arrangements to be in Atlantic City in June to attend the centennial celebration of the American Medical Association.

W. A. Coventry, M.D.
A. W. Adson, M.D.
E. W. Hansen, M.D.
F. J. Savage, M.D.

WOMAN'S AUXILIARY

AMA AUXILIARY BULLETIN

A few more months and the members of the Woman's Auxiliary to the American Medical Association will be arriving in Atlantic City, New Jersey, for their annual convention, June 9-13.

Have you made your reservation? If not, send your request at once to Dr. Robert A. Bradley, Chairman Subcommittee on Hotels, 16 Central Pier, Atlantic City, New Jersey.

HENNEPIN COUNTY

The annual Public Relations meeting was held at the Medical Arts Lounge March 7, with Mrs. Frank T. Cavanor as general chairman.

Representatives from many women's organizations were guests, to hear a lecture on "Hormones from Adolescence to the Prime of Life," by Dr. Nora Winther, gynecologist at the University of Minnesota Student Health Service.

Mrs. Elmer M. Rusten gave a talk on health bills in the Minnesota Legislature.

MOWER COUNTY

Mrs. F. H. Rosenthal was hostess to the Woman's Auxiliary of the Mower County Medical Society, February 24, at her home.

Mrs. P. A. Lommen reported on the last co-ordinating council meeting. Council dues were paid, and Mrs. L. G. Flanagan made a motion that each member pay $2.00 toward the auxiliary project of the year and $1.00 to the Cancer Control Fund.

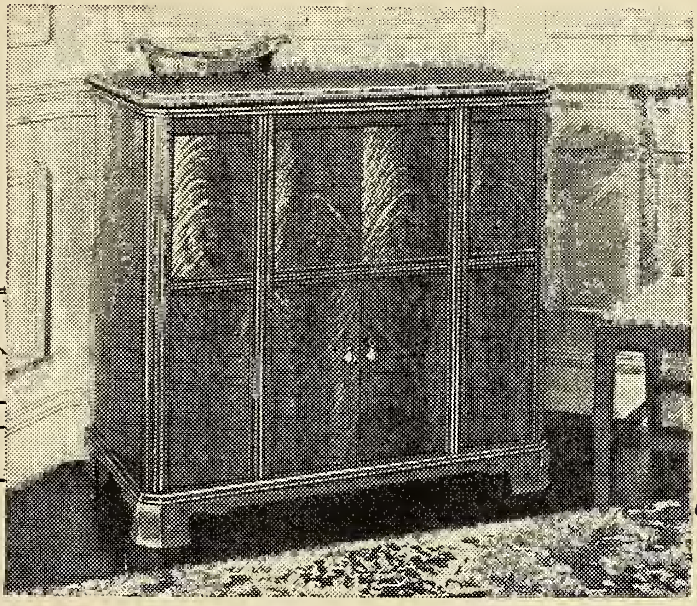
RANGE MEDICAL AUXILIARY

Organization of the Range Medical Association Auxiliary took place in Hibbing on February 13, when wives of physicians belonging to the Range Medical Association held their initial meeting at the home of Mrs. Robert L. Bowen.

Attended by representatives from Virginia, Buhl, Chisholm, Keewatin, Grand Rapids and Hibbing, the meeting brought into being an organization which automatically becomes a branch of the St. Louis County and Minnesota State Medical Auxiliaries.

The constitution and by-laws of the State Medical Auxiliary were read by Mrs. Robert Murray, who also briefly reviewed the histories of four medical auxiliaries of which she has been a member. To simplify future work, it was decided that all officers serving at one time should be from the same geographical section of the Range. Hibbing was chosen to be the first district under this plan.

Mrs. Robert L. Bowen was selected as chairman of the Nominating Committee and was instructed to prepare a slate of officers for the election to be held at the next meeting. As members of her committee she named Mrs. L. W. Johnsrud, Hibbing; Mrs. Edward T. Clark, Buhl; Mrs. Clarence Jacobson, Chisholm; Mrs. E. R. Loofborrow, Keewatin; and Mrs. L. W. Morsman, Hibbing.



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In Memoriam

DOMNICK PATRICK DEMPSEY

Dr. Domnick P. Dempsey, of Kellogg, Minnesota, died November 30, 1946, at St. Mary's Hospital, Rochester, following a fracture of the hip sustained in a fall. He was seventy-six years of age.

Dr. Dempsey was born at Clermont, Iowa, on September 9, 1870. After receiving a B.S. degree from Valparaiso University in 1903, he obtained his medical education at Creighton Medical School in Omaha, graduating in 1906. He interned at St. Mary's Hospital in Minneapolis, and opened an office in Kellogg, Minnesota, and in Wabasha, Minnesota, in conjunction with Drs. Lester and Doherty in 1907.

He was elected president of the Wabasha County Medical Society in July, 1912. The subject of his presidential address at the annual meeting in 1913 was "The Press as a Factor in Public Health Work." Again elected president in 1928, he entitled his address in 1929, "Let Us Try," which was a plea for all members of the medical profession to live up to the highest principles of professional ethics. In 1942 he was elected vice president of the society, and in 1943, in the absence of the president who was serving with the armed forces, Dr. Dempsey again gave the presidential address, which was entitled "A Few Remarks on Obstetrics," relating some of his interesting experiences during thirty-six years of practice.

At the time of his death, Dr. Dempsey was on the staff of St. Elizabeth's Hospital, Wabasha, and was an affiliate member of the Wabasha County Medical Society, the Minnesota State and American Medical Associations.

He is survived by a sister who lives in Dubuque, Iowa, and by several nephews and nieces in Iowa and Nebraska.

* * *

Note: More complete information having been received on the life of Dr. Dempsey, since publication of the obituary in the February issue, and in order to correct the mispelling of his first name, this second sketch of his life is published in this issue.

WALTER I. LILLIE

Dr. Walter I. Lillie, former associate in ophthalmology at the Mayo Clinic and since 1933 a resident of Philadelphia, died suddenly on February 21, 1947.

Dr. Lillie was born November 5, 1891, at Grand Haven, Michigan. He received his M.D. degree at the University of Michigan in 1915 and the degree of M.S. in ophthalmology from the University of Minnesota in 1922. He interned at the University of Michigan Hospital in 1916 and practiced at Flint, Michigan, before joining the Mayo Clinic in 1917. At the time of his death Dr. Lillie was professor of ophthalmology at temple University School of Medicine and head of the Department of Ophthalmology at Temple University Hospital, Philadelphia.

Dr. Lillie was certified as a specialist in ophthalmology in 1929 and was a member of the American College of Surgeons, the American Ophthalmological Society, and the American Academy of Ophthalmology and Otolaryngology.

In 1932 Dr. Lillie spent six weeks in Shikarpur, India, at the Seth Heranand Charitable Eye Hospital and shared in the operative work of the annual clinic being held by Mr. H. T. Holland, F.R.C.S.

He was married on August 30, 1916, to Opal C. Jones, who survives him. His brother, Dr. H. I. Lillie, is chief of the Section on Rhinology and Otolaryngology of the Mayo Clinic.

WINFORD PORTER LARSON

Dr. Winford Porter Larson, Professor of Bacteriology and Immunology at the University of Minnesota died, January 1, 1947 of staphylococcic bacteriemia. Dr. Larson was born at Poy Sippi, Wisconsin, March 7, 1880. He received the M.D. degree from the Illinois Medical School in 1904, and afterwards spent seven years in postgraduate study at Berlin, Paris, Vienna, and Copenhagen. He was appointed Instructor in Bacteriology and Immunology at the University of Minnesota in 1911, and was made Head of the Department in 1918. He was a member of the Society of Bacteriologists, the Association of Pathologists and Bacteriologists, and the Association of Immunologists. During his long career he developed a strong department at Minnesota which embraced fundamental bacteriological studies as well as Medical Bacteriology.

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His published scientific papers covered a number of subjects and were more than forty in number. His earliest significant publication was to demonstrate that children receiving milk from herds of cattle infected with contagious abortion gave evidence of becoming infected with the organism. This was probably the earliest work on the demonstration of the occurrence of undulant fever in man.

His basic interest was the physical chemistry of bacteria which was the concern of many of his papers. He was the first to demonstrate that the form of bacterial growth and cultures was not a character of the organ, but of the relationship of the organ to the medium in which they were growing. He studied the effect of high pressure on microbes and showed that they could be exploded by realeasing them suddenly from high pressure. A number of his scientific studies had to do with the effect of surface tension depressants on bacterial growth and toxin formation. He became especially interested in immunizing against diphtheria and scarlet fever and was the first to effect a method of protecting against these diseases by active immunization with detoxified bacterial toxins. During his years of research he carried out numerous investigations on the bacteriology of lobar pneumonia and was the first to develop an active anti-pneumococcus serum made from rabbits.

At the time of his death, his active investigations concerned the nature of post pneumonic encephalitis and had developed evidence that this was due to abnormal blood clotting associated with the recovery processes.

E. J. Bell

CLIFFORD G. SALT

Dr. Clifford G. Salt, Minneapolis, died February 13, 1947, at the Swedish Hospital, following a prolonged illness. He was sixty-five years of age.

Dr. Salt was a graduate of the University of Ohio and received his medical degree from the University of Minnesota in 1921. He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He is survived by his widow, three sons, Terry, John and Thomas, and a daughter, Celia, all of Minneapolis.

MINNESOTA ACADEMY OF MEDICINE

Peripheral Arterial Embolism

(Continued from Page 441)

Dr. Borg, in closing: Dr. Kamman's question has been answered, I think. I would simply state that a great number of emboli in the upper extremity require no surgical treatment. However, the last two cases which I had the opportunity of seeing had upper extremity emboli. One patient had numerous embolic phenomena. He called me as soon as his pain came on in the hand. I recognized what had happened and found he had a hand in which no radial pulsation could be felt. I gave him intravenous papaverine and inside of half an hour the color returned in the hand and the numbness disappeared. I do think we cannot regard all upper extremity emboli as innocuous.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary*

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Of General Interest

At an annual reunion dinner on February 25, Dr. R. O. Quello, Minneapolis, was elected president of the Twin City St. Olaf Club.

* * *

Dr. H. R. Butt, Rochester, discussed "Hepatitis" at a meeting of the Woodbury County Medical Society in Sioux City, Iowa, on February 20.

* * *

Dr. L. E. Prickman, Rochester, spoke on "Brucellosis" at a meeting of the West Concord Farm Bureau held in West Concord on March 6.

* * *

At a meeting of the Sedgwick County Medical Society, Wichita, Kansas, early in March, Dr. B. E. Hall, Rochester, presented a paper entitled "Radioactive Phosphorus Therapy."

* * *

Dr. H. A. Roust, Montevideo, after seventeen years in the same office building, has moved to the Bauman Building in Montevideo, where he has opened a six-room office.

* * *

Dr. Thomas Lowry, Minneapolis, has announced the association of Dr. Herbert F. R. Plass in the practice of internal medicine, with offices at 629 Medical Arts Building.

* * *

Dr. Frank E. Mork, Anoka, has been elected vice president of the St. Andrew's Hospital staff in Minneapolis, thereby becoming a member of the Executive Board governing the hospital.

* * *

Dr. Ralph L. Estrem has reopened his medical practice in Fergus Falls. Dr. and Mrs. Estrem and their son recently returned from Panama where Dr. Estrem was stationed while in the army.

* * *

At a postgraduate refresher course at the University of Kansas School of Medicine on March 10, Dr. R. D. Pruitt, Rochester, spoke on "Treatment of Acute Myocardial Infarcation" and "The Precordial Electrocardiogram."

* * *

Carrying out a long-contemplated plan, Dr. M. I. Hauge, Clarkfield, has moved his offices from the lower floor of the Clarkfield Hospital to a new suite in a more centrally located office building.

* * *

"Total Gastrectomy with Esophagoduodenal Anastomosis" was the subject of a talk by Dr. J. T. Priestley, Rochester, at a meeting of the Central Surgical Association held in Chicago in February.

* * *

Dr. John F. Madden, Saint Paul, addressed the Polk County Medical Society at Frederic, Wisconsin, on February 20, speaking on "The Treatment of Common Skin Diseases."

* * *

Dr. Benedik Melby, Blooming Prairie, was married to Miss Julia Hendrickson of that city on March 3. Shortly after the ceremony the couple left for Chicago where they planned to spend several days.

* * *

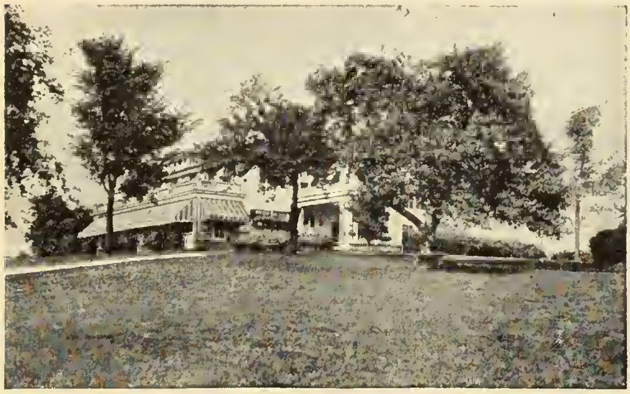
On February 28, Dr. Wilford F. Widen, Minneapolis, gave a talk on "The Game of Life" at the annual Fathers' and Sons' banquet sponsored by the Brotherhood of Ebenezer Lutheran Church in Minneapolis.

* * *

At a meeting of the Minnesota Occupational Therapy Association in Minneapolis on February 22, Dr. E. C. Elkins, Rochester, presented a paper and a motion picture on "Physical Rehabilitation of the Paraplegic."

* * *

During March, Dr. J. A. Bargen, Rochester, traveled to Buneos Aires, Argentina, to participate in a National Medical Convention. On the way he stopped to deliver addresses at meetings of the Medical Society of Puerto Rico at San Juan, Puerto Rico, and the Assembly of Medicine at Rio de Janerio and São Paulo, Brazil.



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Dr. B. T. Horton, Rochester, was guest speaker at the Founders' Day banquet of the Phi Chi medical fraternity held in Saint Paul on February 27. Dr. Horton discussed recent advances in the treatment of nerve deafness.

* * *

Dr. Charles E. Stafford, Baudette, received official notice on February 28 that he had been promoted to the rank of major in the army medical corps. During the war Dr. Stafford served for two years in the Philippines and in Australia.

* * *

Dr. R. C. Radabaugh, Hastings, has announced that Dr. W. D. Holcomb, formerly of Colorado Springs, Colorado, has joined him as an assistant. Dr. Holcomb, a graduate of Boston University, has been in general medical practice in Colorado.

* * *

The village council of North Saint Paul recently named a street in honor of Dr. E. W. Cowern, who has practiced in the village since 1903. Located on Colby Hill in the new Country Club Heights addition, the street has been named Cowern Place.

* * *

A new medical magazine, *Postgraduate Medicine,* has Dr. Charles W. Mayo, Rochester, as its editor-in-chief. The new publication, which released its first issue on February 28, is the official bulletin of the Interstate Postgraduate Medical Assembly, an organization devoted to the extension of medical knowledge.

* * *

Among recent lecturers at the Center for Continuation Study at the University of Minnesota have been Dr. J. D. Camp, Rochester, who spoke on "Malacic Diseases of Bone," and Dr. J. M. Waugh, Rochester, who discussed "Vaginal Plastic Operations" and "Vaginal Hysterectomy and Anticoagulant Therapy."

* * *

Pequot Lakes obtained a new physician when Dr. James E. Fearing, formerly of Virginia, became associated with Dr. T. E. Eyres early in March. When Dr. Eyres leaves in June to take postgraduate work at the Cook County Hospital in Chicago, Dr. Fearing will take over the practice.

* * *

Five of the Minnesota surgeons who participated in a sectional meeting of the American College of Surgeons, held in Omaha on March 14 and 15, were Drs. Frederick G. Kolouch, John L. McKelvey and Edward T. Evans, Minneapolis, and Drs. John S. Lundy and Edgar Allen, Rochester.

* * *

Stressing the advances that medicine is making in determining the cause of cancer, Dr. R. W. Kearney, Mankato, discussed progress in medicine at a dinner meeting of the Mankato Business and Professional Women's Club on February 18. The meeting was held in observance of the club's annual health program month.

* * *

A conference on the treatment of experimental poliomyelitis in animals, held in New York on February 21,

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was attended by Dr. Raymond N. Bieter, head of the Department of Pharmacology in the University of Minnesota Medical School. The conference was sponsored by the National Foundation for Infantile Paralysis.

* * *

Dr. A. H. Wolf, Harmony, recently sold his office equipment and medical practice to Dr. Carl G. Nelson, formerly of Minneapolis. Dr. Nelson, who has begun his practice in Harmony, graduated from medical school in 1942 and later spent almost three years in the army, two years of which were in overseas service.

* * *

The University of Minnesota regents at their monthly meeting on February 14 named Dr. William B. Tucker as a clinical associate professor of medicine. Dr. Tucker, who is chief of the tuberculosis service at the Veterans Hospital in Minneapolis, will serve part time at the University.

* * *

Dr. J. Hartman, in charge of the Soudan Hospital for the past year and a half, has resigned his position and moved to Portland, Oregon, to enter private practice. The hospital, owned by the Lenont-Peterson Clinic of Virginia, has been taken over by Dr. T. P. Mollers of Mountain Iron.

* * *

Dr. H. Waltman Walters, Rochester, has been appointed to the National Advisory Cancer Council of the United States Public Health Service. Dr. Walters, who graduated from Dartmouth College and did graduate work in surgery at the University of Minnesota, is a surgeon at the Mayo Clinic and professor of surgery in the Mayo Foundation.

* * *

Certification to the American Board of Internal Medicine has been awarded Dr. Randall Derifield, Hibbing, it was announced March 1.

Dr. Derifield, a staff member of the Mesaba Clinic, was a lieutenant colonel in the army during the war and served overseas for thirty months, the greater part of which time was spent in New Caledonia.

* * *

Attended by more than 200 Izaak Walton members from throughout the state, a testimonial dinner was held in Rochester on February 20 to honor Dr. M. M. Hargraves, Rochester, the new state president of the organization. Past and present state and national officers of the Izaak Walton League were included in the group which gathered to salute Dr. Hargraves.

* * *

In Stillwater, Dr. R. J. Josewski and his staff are now established in a new suite of offices on South Main Street. Decorated and furnished with an emphasis on patient comfort, the office suite consists of a reception room, children's room, examination and consultation rooms, as well as a modern x-ray room and darkroom.

* * *

In charge of a veterans' psychiatric service, recently inaugurated in Minneapolis by the Hennepin County Red Cross, is Dr. Eric K. Clarke, assisted by Dr. Stanley G. Law and Dr. William Fleeson of the Minnesota Psychiatric Institute. The psychiatric service, located in offices at 1111 Nicollet Avenue, Minneapolis, is available to veterans and members of their families.

* * *

A new staff member of the Worthington Clinic is Dr. John Stam, formerly of Minneapolis, who began practice in Worthington on March 17.

Dr. Stam, a graduate of the University of Illinois Medical School, interned at Cook County Hospital, Chicago, and was a resident in pediatrics at Northwestern Hospital, Minneapolis. For a time he practiced general medicine at La Grange, Illinois.

* * *

Dr. Richard H. Picha, recently discharged from the army, plans to enlarge the St. Louis Park office which he shares with Dr. A. C. Stahr, and to continue his Hopkins practice. A graduate of the University of Minnesota, Dr. Picha has practiced in St. Louis Park for thirteen years. While in the army, he worked in anesthesia and general surgery at hospitals in Michigan, Indiana and Illinois.

* * *

The Glenwood Clinic, a twenty-three room, air-conditioned structure erected by Dr. M. B. Dahle, Glenwood, was officially opened on March 15. Occupied by Dr. Dahle and Dr. P. A. Swedenburg, the new clinic building contains a ward, an operating room, x-ray laboratory, physiotherapy and eye-ear-nose-throat departments, three suites of offices, a four-room dental suite, and a large reception room.

Dr. Joseph L. Arko, Hibbing, attended a course in ophthalmology from February 17 to 21 at the Center for Continuation Study at the University of Minnesota.

* * *

Among those from the Duluth area who attended the meeting of officers of county medical societies of the Minnesota State Medical Association, held in Saint Paul on March 1, were Dr. D. W. Wheeler, president, and Dr. Elizabeth Bagley, secretary-treasurer, of the St. Louis County Medical Society.

* * *

Dr. Francis W. Lynch, Saint Paul, clinical associate professor of dermatology at the University of Minnesota, was guest speaker at a meeting of the Northwest District Medical Society held on February 27 in Minot, North Dakota. Speaking on epidemic ringworm of the scalp, Dr. Lynch described how the disease has been treated in school children in Saint Paul during the past two years.

* * *

In an exchange of cigars with Dr. Charles W. Brown, Minneapolis, on February 26, Dr. William A. O'Brien, director of postgraduate medicine at the University of Minnesota, thought he had developed diplopia.

Dr. O'Brien was passing out cigars to celebrate the arrival of a baby daughter, his sixth child. Dr. Brown for the same reason was passing out cigars, only his came in doubles. Mrs. Brown had given birth to twins.

* * *

With the recent reappointment by Governor Youngdahl of two members whose terms expired January 1, 1947, and the appointment of one new member, the State Board of Health now consists of Drs. T. B. Magath, Ruth E. Boynton, F. W. Behmler, and E. S. Platou; W. L. Webb, D.D.S.; Gustav Bachman, Pharm.D.; F. E. Bass, C.E.; L. M. Thompson; and M. Sidney Hedeen, D.O., succeeding Dr. A. G. Schulze, who has resigned.

* * *

Dr. C. C. Burlingame, former assistant superintendent of the Fergus Falls State Hospital, is now head of a large neurological clinic in the East, with twenty-one physicians on his staff, and with offices in New York, Boston, and New Haven, Connecticut.

While in Fergus Falls, Dr. Burlingame attracted national attention for his work in wiping out typhoid fever among the patients at the state hospital. During World War II he was a member of General Marshall's staff. He has recently completed a medical survey in France, Germany and England.

* * *

Dr. Joseph B. Gaida, St. Cloud, has announced the association of Dr. John E. Conway as a specialist in eye, ear, nose and throat diseases.

Dr. Conway, a graduate of the University of Wisconsin Medical School in 1940, interned at Ancker Hospital, Saint Paul, and took postgraduate training in eye, ear, nose and throat diseases at the University of Minnesota. He was assistant resident in 1941-42, and chief resident in 1942-43, in the Eye, Ear, Nose and Throat Department of Ancker Hospital. While in the army, he was chief of the Eye, Ear, Nose and Throat Departments of army hospitals at Herrington and Topeka, Kansas.

* * *

Dr. Fred J. Pratt, Jr., who recently returned from the East where he had been doing postgraduate work since his release from the army, is now associated with his father, Dr. F. J. Pratt, Sr., and with Dr. G. M. Koepcke at 801 Physicians and Surgeons Building, Minneapolis.

Dr. Pratt, a graduate of the University of Arkansas Medical School, interned at Minneapolis General Hospital and had a year of residency there in eye, ear, nose and throat diseases. While in the army, he was stationed at the Nautilus Veterans Hospital, Miami Beach, Florida, in charge of the Eye, Ear, Nose and Throat Department.

* * *

Sponsored by Sigma Xi, scientific fraternity, Dr. Gaylord W. Anderson, director of the School of Public Health at the University of Minnesota, discussed advances in medicine during World War II, at a special lecture on February 25 in Northrop Memorial Auditorium at the University. During the war Dr. Anderson was director of the Division of Medical Intelligence in the office of the Surgeon General.

Earlier in the month Dr. Anderson spoke to the Faculty Women's Club at the University on the type of work done by his division during the war, work that included the compilation of climatic, health and sanitary evidence from every part of the world.

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A pioneer physician of the border country, Dr. Robert Hugh Monahan, Sr., International Falls, has retired after forty years of active practice.

Dr. Monahan, a graduate of Hamline University Medical School and the University of Minnesota, practiced in International Falls from 1909 to 1917 and again from 1940 to 1947. He enlisted in the army in 1917 and, while stationed in England, studied orthopedics under Sir Robert Jones, one of the outstanding orthopedic surgeons of the time. Following the war, Dr. Monahan practiced in Minneapolis and was a staff member of St. Barnabus Hospital for twenty years.

Returning to International Falls in 1940, he served on the Selective Service examining board in addition to maintaining a private practice and helping to manage the local hospital. Recently, his son, Dr. R. H. Monahan, Jr., after service in World War II, returned to the city to resume medical practice.

Dr. Monahan, Sr., began his retirement in late January by leaving for California for the remainder of the winter.

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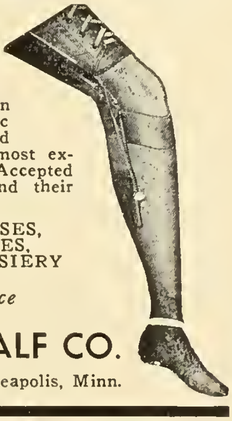

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The U. S. Civil Service Commission has announced an examination for filling Medical Officer positions.

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Interested persons may secure information and application forms from most first- and second-class post offices, from Civil Service regional offices, or from the U. S. Civil Service Commission, Washington 25, D. C. Applications must be filed not later than April 22, 1947.

HOSPITAL NEWS

New finance manager of the Northern Minnesota Hospital, International Falls, is F. R. Willey, formerly of Minneapolis, it was announced March 1. As part of a new policy, patients now entering the hospital will be required to make an advance payment of one week's expenses unless they hold acceptable hospitalization insurance.

* * *

The third appointment within thirteen months of a new head for the Minneapolis Veterans Hospital, Dr. Erwin J. Rose has been named manager of the hospital to succeed Colonel Harry E. Caldwell.

In answer to the charges made recently by the Veterans of Foreign Wars and the Disabled American Veterans organizations, that the tuberculosis wards at the hospital were mismanaged, investigators from the headquarters of the Veterans Administration announced that patients in the Minneapolis hospital receive better care than anywhere else in the country.

The Veterans Administration stated that Colonel Caldwell would be assigned to another post, and that Dr. Rose's appointment had been under consideration for several months.

* * *

W. Dayton Shields has been appointed administrator of Asbury Hospital, Minneapolis, to replace Lydia A. Miller who retired on March 1 after nineteen years as superintendent.

Mr. Shields, a graduate of the University of Min-

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nesota Business School, formerly was in the administrative office of Swedish Hospital, Minneapolis. For three years during the war he was associated with an army general hospital unit, and following the war, he took a course in hospital administration at Northwestern University.

* * *

On February 28 Northwestern Hospital, Minneapolis, opened a new laboratory which contains one of the most modern blood transfusion services in the country. Housed in a new wing of the building, the laboratory is divided into sections for bacteriology, chemistry, hematology, tissue pathology, and blood processing and storage. As part of the equipment for the blood bank, the laboratory has a precipatron, a type of air-conditioning unit, which removes dust and bacteria from the rooms in which blood and plasma are processed.

In charge of the laboratory is Dr. Sheldon H. Stuurmans, pathologist for Northwestern Hospital.

* * *

From the hospital planning committee in Blue Earth has come word that excellent progress is being made towards the erection of a community memorial hospital. At present, funds for construction of the hospital total over $90,000. Since January 1 about $20,000 in cash payments on new and old pledges have been added.

In February committee members conferred with Dr. Viktor O. Wilson, of the Minnesota State Department of Health, in regard to design and methods of management of the proposed hospital. Members of the committee include Homer Enterline, Elmore; Clifford Kittelson, Frost; Walter Schwen and John Frundt, Blue Earth.

* * *

In Westbrook a drive is in progress to collect funds for the erection of a hospital to be known as the Dr. Henry Schmidt Memorial Hospital.

* * *

An open meeting was held in Paderewski Hall, Browerville, on February 27, to discuss possibilities of using Federal funds under the Hill-Burton Act to improve hospitalization facilities in Todd County. Principal speakers at the meeting were Dr. Viktor O. Wilson, representative of the State Department of Health and head of the Hospital Licensing Division, in Minnesota, and K. A. Kirkpatrick, Minnesota Farm Bureau hospitalization director.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

THE COMPLEAT PEDIATRICIAN. Practical, diagnostic, Therapeutic and Preventive Pediatrics. Wilburt C. Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University, etc. 5th ed. Price, $3.75 with order; $4.00 on credit. Durham, N. C.: Duke University Press, 1946.

The Compleat Pediatrician, now in its fifth edition, has become a *sine qua non* among all those who wrestle with the innumerable problems and diagnostic difficulties of children.

The reviewer has been familiar with this book for many years, and it would be about the last book he could spare.

When the pediatrician runs into a peculiar situation, when nothing seems to add up exactly right, it will be seldom indeed that he will not get a lead of some kind from this book that will set him on the right path. It is a veritable encyclopedia of information, well sifted, condensed, practical and comprehensive. It is a book which every pediatrician will want on his desk and which he will consult first in every pediatric quandary.

C. H. Schroeder, M.D.

MODERN MANAGEMENT in Clinical Medicine. Frederick K. Albrecht, M.D. 1238 pages Illus. Price $10.00. Baltimore: Williams & Wilkins Company, 1946.

This book is a compilation of our present knowledge of modern medicine, written in a manner the average doctor enjoys. The author must have devoted a tremendous amount of effort and time in collecting the valuable information presented. Each subject is discussed thoroughly, and still the style is not verbose. An example of this is the chapter dealing with the subject of endocrinopathies.

The use and rationale of the newer drugs is discussed fully. Illustrations throughout are very helpful.

Although the author intended this book for the doctor's office, it would be a very practical addition to the library of the intern, general practitioner or clinician in any specialty.

Joseph M. Ryan, M.D.

A BLIND HOG'S ACORNS. Cary P. McCord, 311 pages. Price, $2.75. Chicago; Cloud, Inc., 1946.

Taking the title of his book from a remark made in his youth that "even a blind hog gets an acorn once in a while," the author shows by a series of interesting anecedotes that a medical man with his wits about him can solve many baffling problems in an industrial practice.

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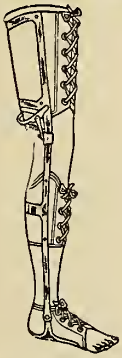

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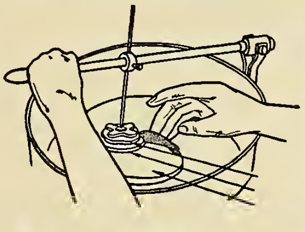

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 **May, 1947** **No. 5**

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[1] Watson, B. P.: J. Clin. Endocrinology 4:571 (Dec.) 1944.

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1. Editorial: J.Am.Dietet.A., *22*:1063 (Dec.) 1946.
2. Ravdin, I.S.: Some Problems of Protein Deficiency, Connecticut M.J., *11*:7 (Jan.) 1947.

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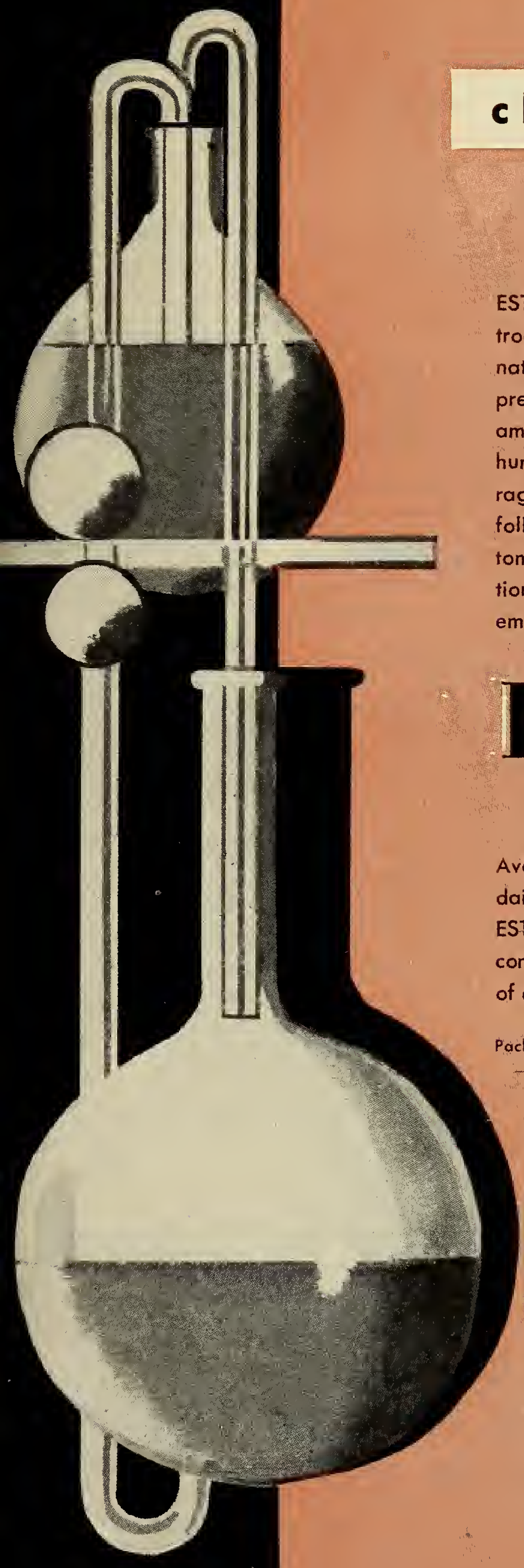

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1. Bickers, W.: Am. J. Obst. & Gynec. 51:100, 1946.

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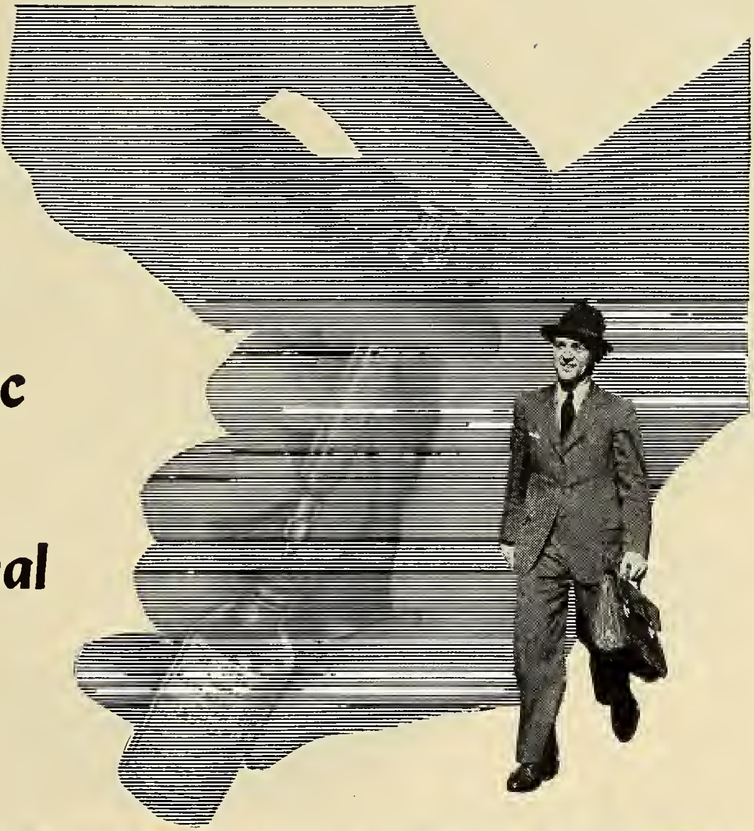

"The ideal in therapy...is to convert the diabetic into a normal person."[1] While certain restrictions must always be imposed, many patients can be controlled through diet alone so as to dislocate their normal habits as little as possible. In those cases where insulin therapy is also required, control may often be attained with but *one daily injection* of 'Wellcome' Globin Insulin with Zinc. Its intermediate action is adaptable to the needs of most mild and many moderately severe cases and adequate control can usually be achieved in three clear-cut steps:

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[1] Bauman, L.: Bull. New Eng. M. Center 5:17 (Feb.) 1943.

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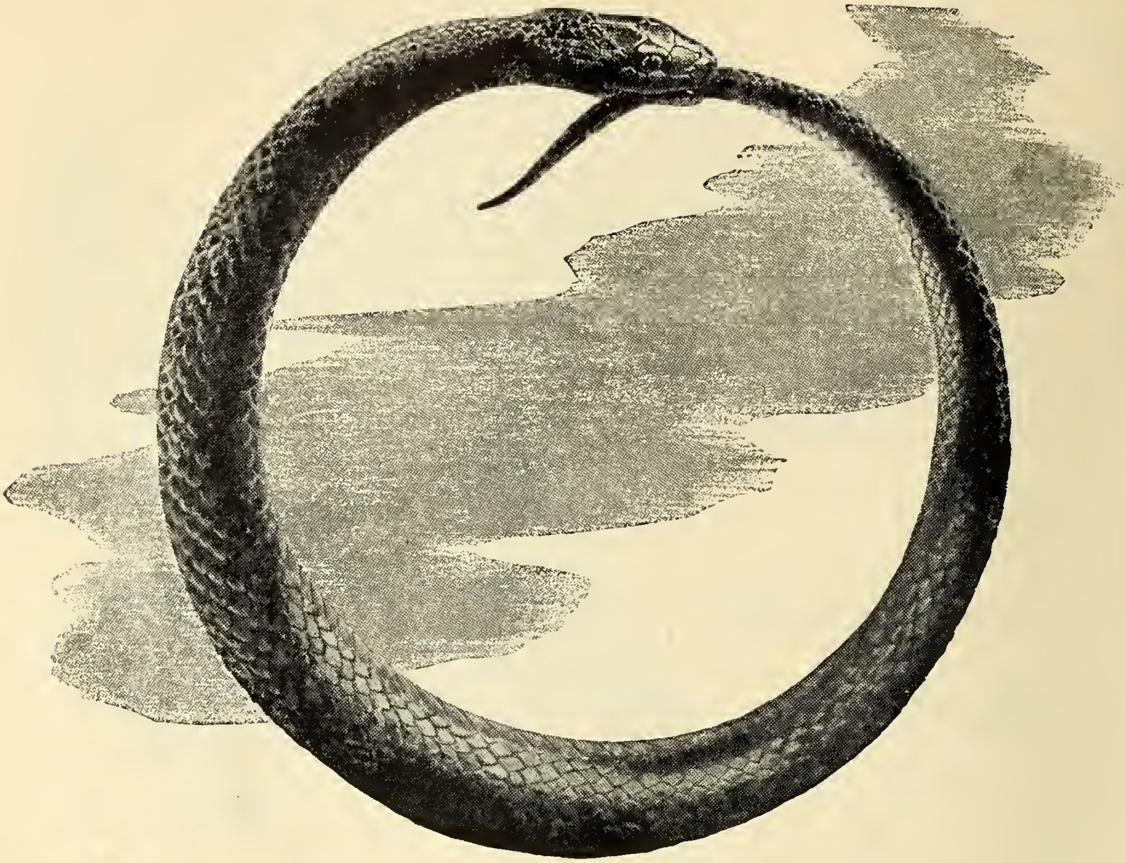

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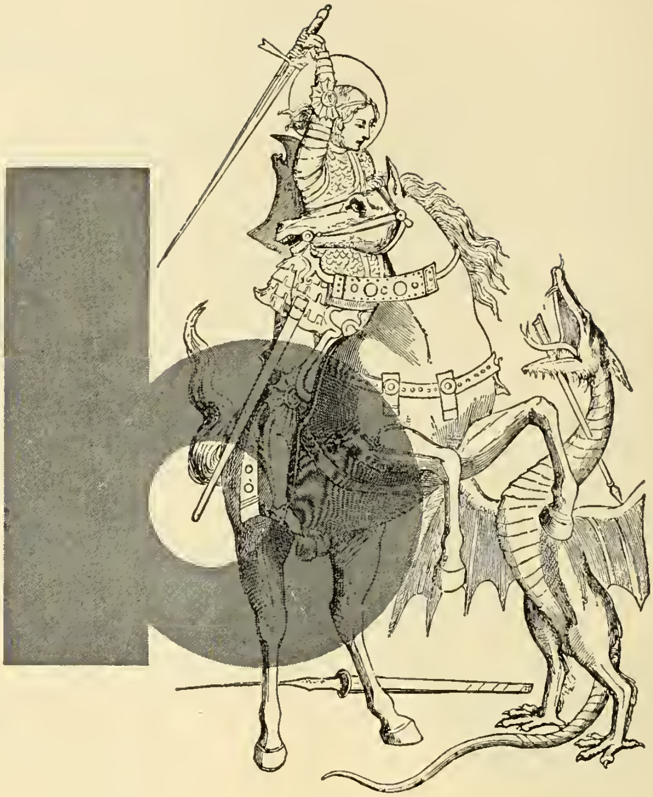

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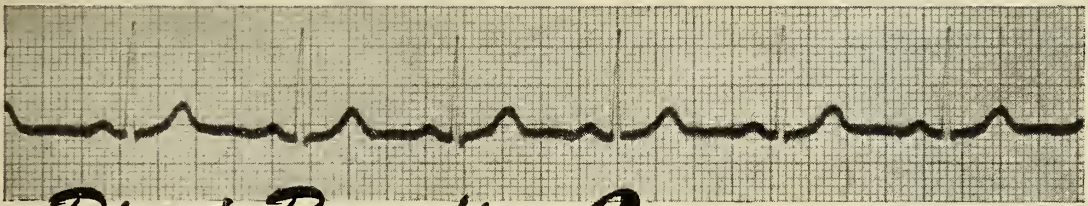

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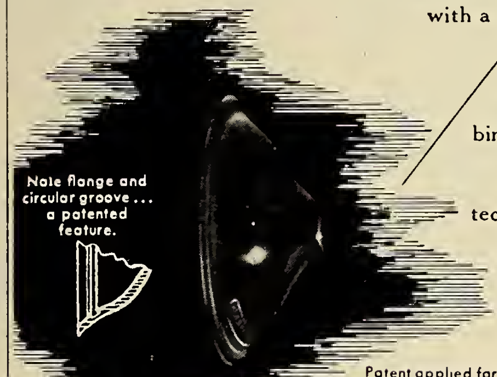

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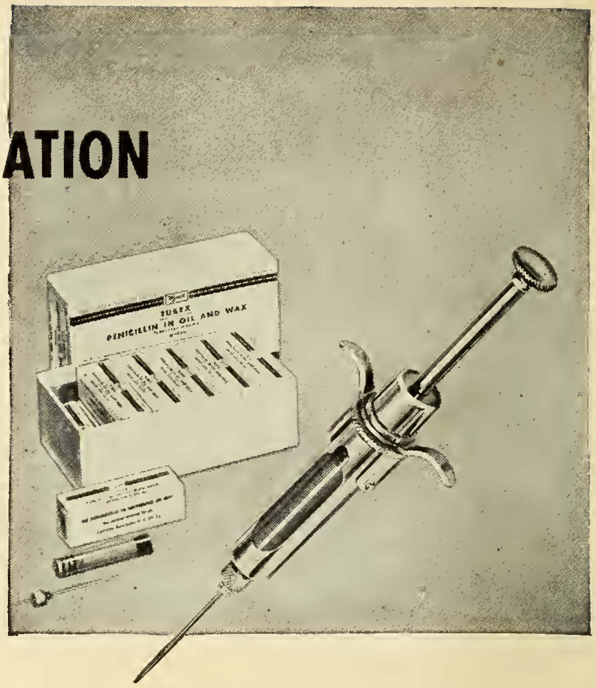

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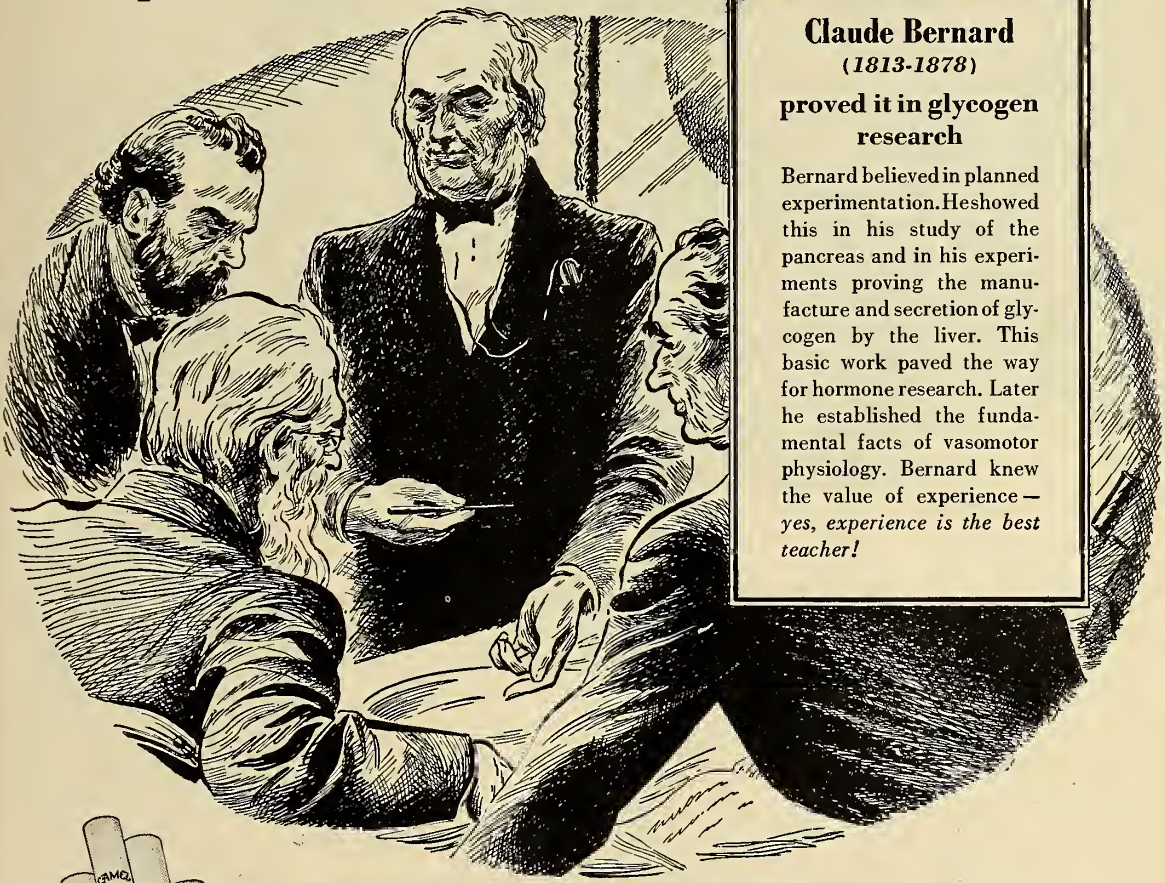

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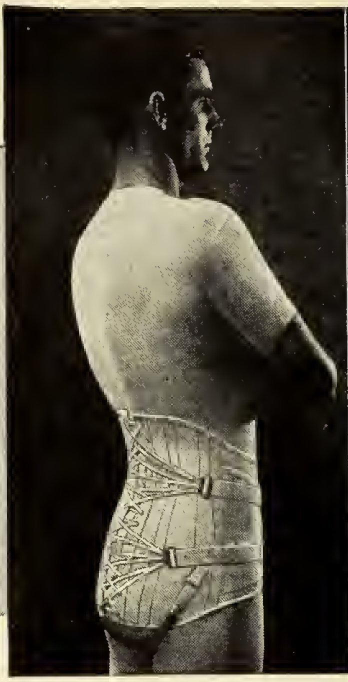

FIGURE 1—Patient—thin type of build with beginning faulty body mechanics. The Camp adjustment provides a more stable pelvis, allowing patient to "draw in" the abdominal muscles thus gradually acquiring a gentle lumbar curve.

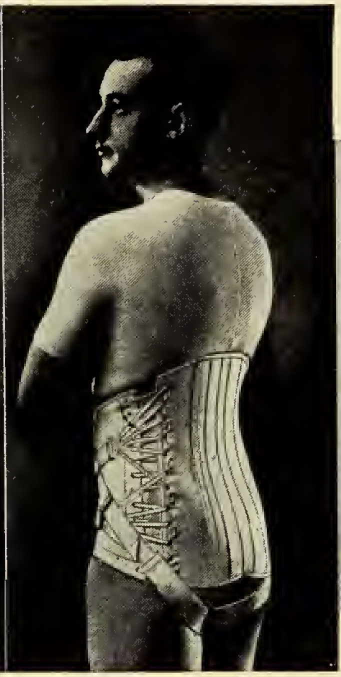

FIGURE 2—Patient—intermediate type of build. Strain of lumbosacral joint predisposes to other strains. For protection of the joints in the lumbar region from recurrent strain and also as an aid in relieving the pain of acute conditions, Camp lumbosacral supports have proved effective.

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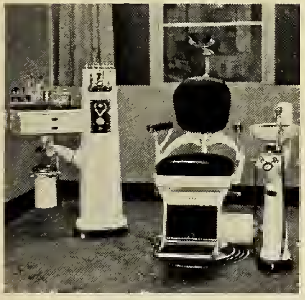
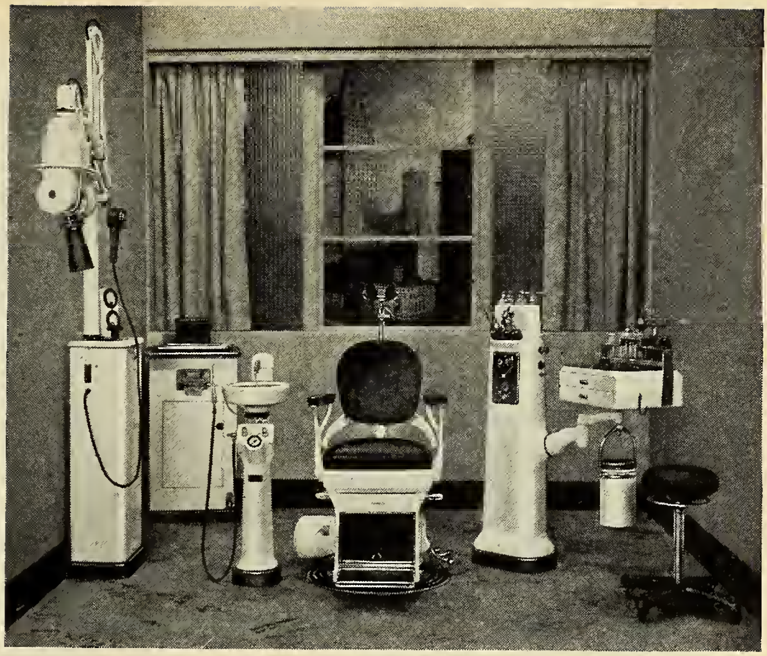


This Ritter Unit is positioned at left, with Surgical Cuspidor at right of chair.



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[1] National Research Council Bull. No. 109, 1943, pp. 18-21.

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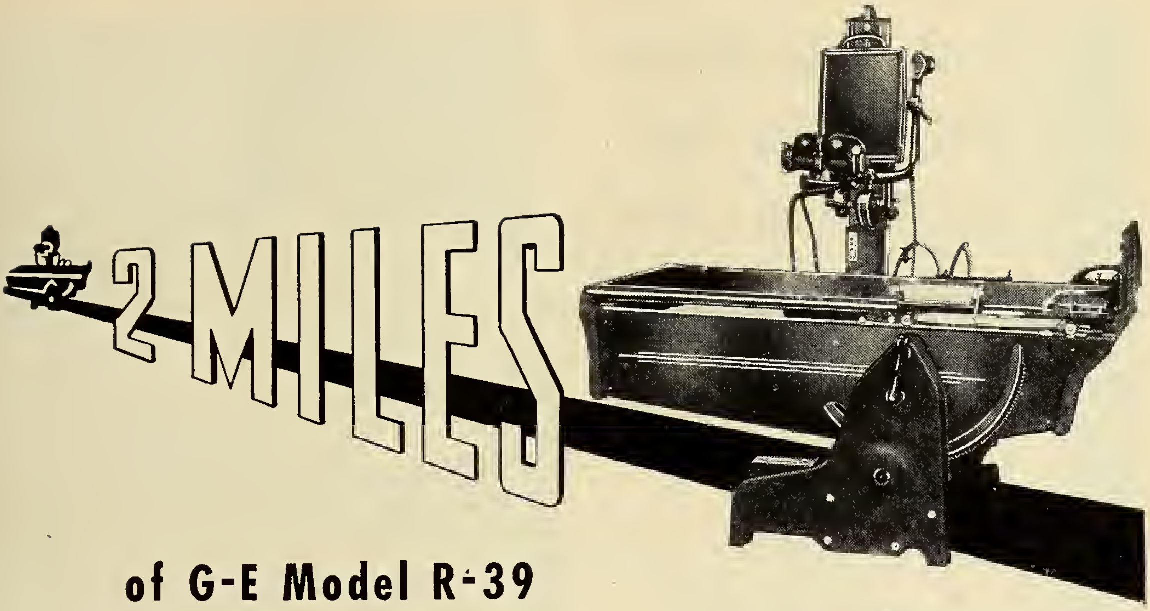

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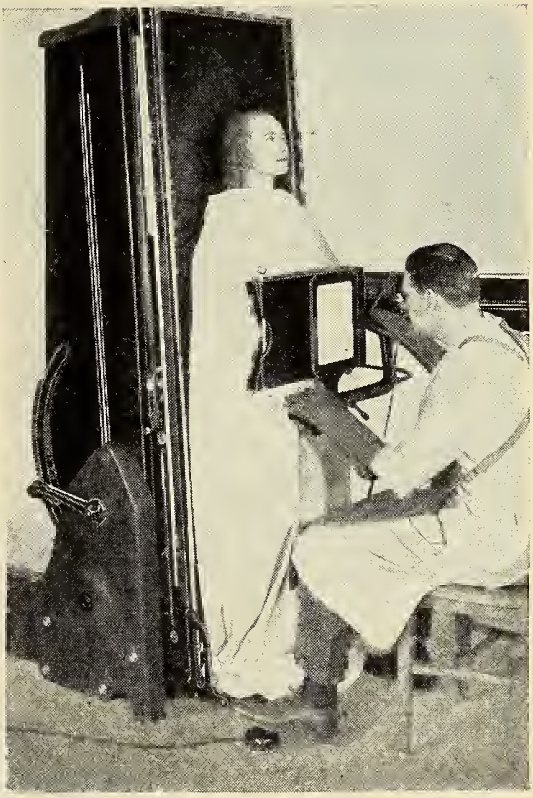

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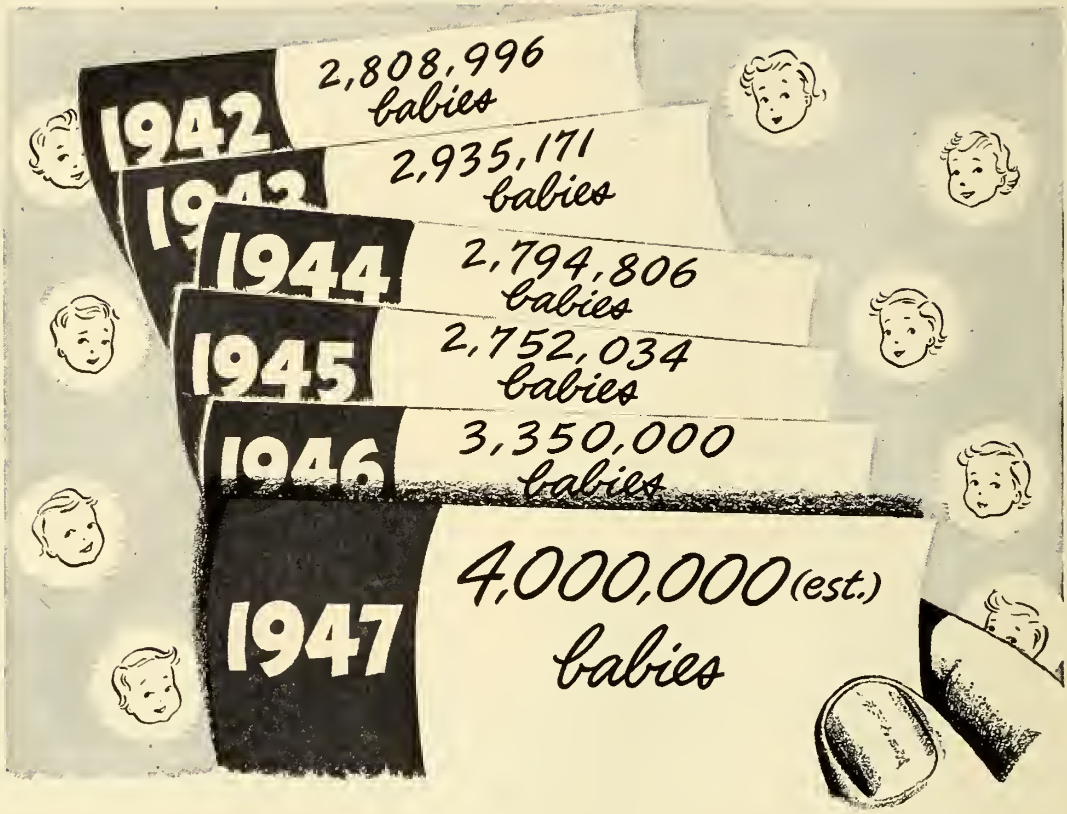
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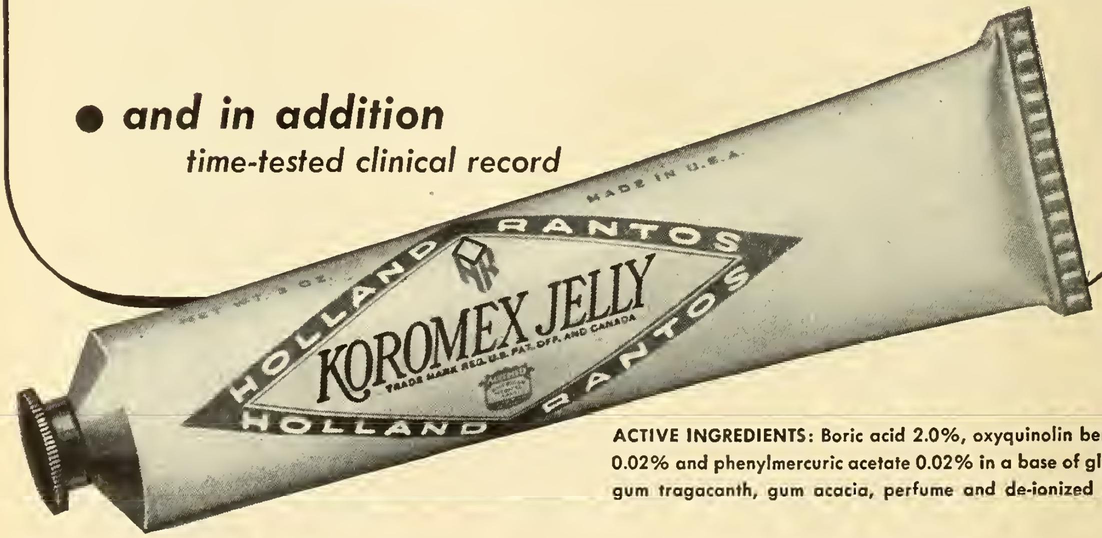
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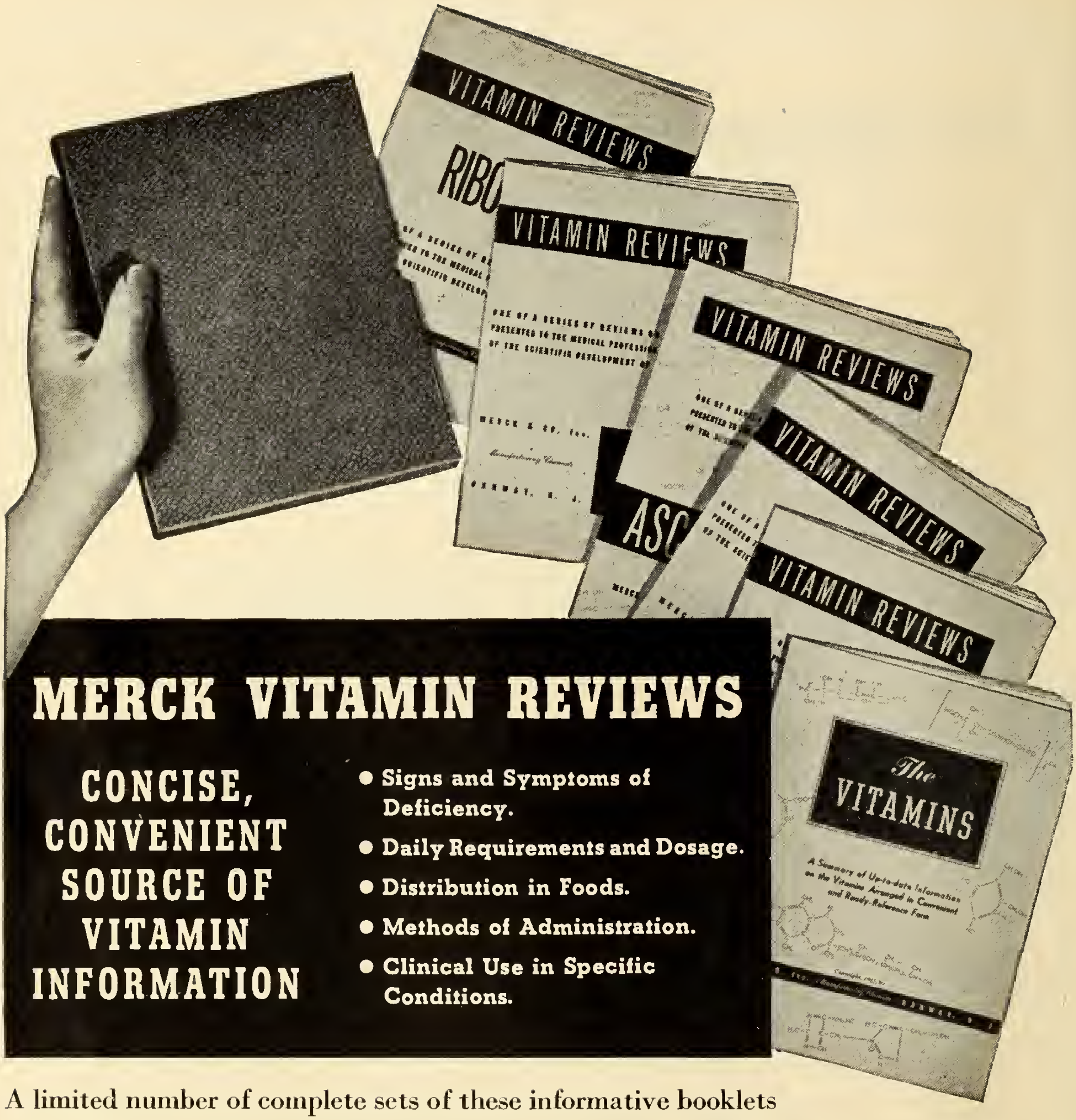
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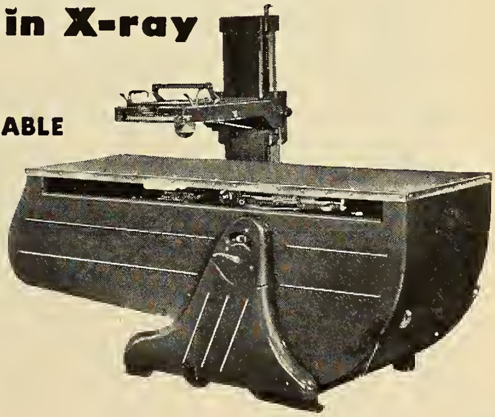

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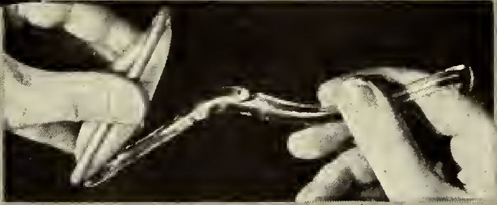

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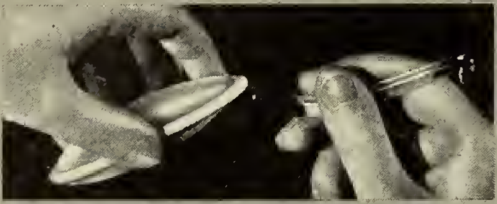

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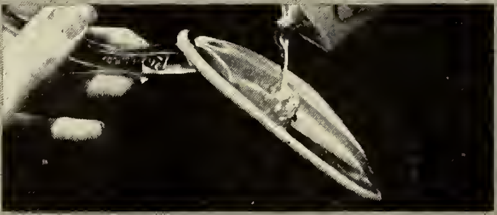

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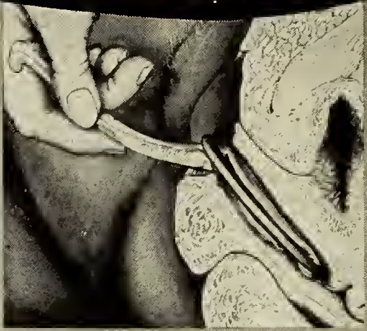

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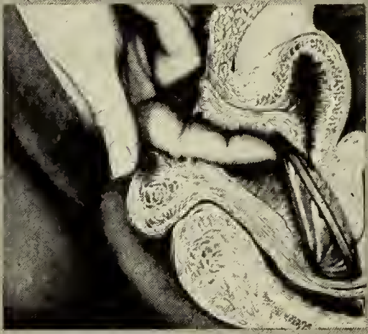

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** Laryngoscope, Feb. 1935, Vol. XLV, No. 2, 149-154*
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Volume 30 May, 1947 No. 5

PROTEIN AND AMINO ACID THERAPY

ROBERT ELMAN, M.D.
Saint Louis, Missouri

It is only within the past decade or two that the importance of protein intake has become appreciated. In discussing this subject, it will be necessary to consider both protein and its building stones, i.e., amino acids, which normally furnish the medium of exchange between protein in the food and body protein, as well as between various body proteins.

The subject of protein and amino acid therapy has a wider interest than merely one of nutrition inasmuch as many surgical conditions result in a loss of blood and exudate, which are essentially protein-containing fluids. In this sense also, transfusions of blood and plasma, which are also protein-containing solutions, come under consideration in the discussion of protein and amino acid therapy.

General Considerations

The importance of protein may be expressed by a statement attributed to Rubner that "protein contains the magic of life, ever newly created, ever dying." This dynamic view of protein metabolism was prophetic, for it was only in the past decade or two that the same conclusion was reached by Shoenheimer and his co-workers, whose fundamental studies were based on the employment of the latest tool of biological research, the labeled or isotopic molecule, which is one of the useful contributions of nuclear physics, whose more spectacular application resulted in the atomic bomb.

It is important to realize that proteins are quite diverse in their function, varying from the circulating plasma proteins, the hemoglobin imprisoned in the red cells, the protoplasm of tissue cells, to the hormones and enzymes, all protein molecules. Secondly, proteins vary in size and shape, from the relatively small insulin molecule to the tremendous globulin, which has a molecular weight of 250,000. Shape varies from the relatively spherical contour of albumin to the long, stringy appearance of the fibrous proteins such as gelatin and keratin. Thirdly, proteins vary in their amino acid composition, which is probably the reason why one protein must be broken down to amino acids before another protein can be synthesized.

Amino acids circulate in the blood like glucose probably because of the fact that they act as a medium of exchange between the proteins of the food and the various proteins within the body. The actual amount of amino acids circulating in the plasma is similar to the amount in glucose, i.e., about 80 mg. per 100 c.c. Changes in their level have received rather limited study. If there is any analogy with the information contributed by the study of the glucose level in the blood, a great field for future research should follow further investigation of the concentration of amino acids in the blood.

Historical Survey

In L. B. Mendel's book on nutrition, *The Chemistry of Life,* there is an interesting discussion of the history of the various food elements. It is only within the past hundred years that the Hippocratic idea of a universal food element was shown to be untrue. Prout in 1830 first showed that there were at least three different food elements, i.e., carbohydrate, protein and fat. Mul-

---

From the Washington University School of Medicine and Barnes Hospital, St. Louis, Missouri.

Presented at a joint meeting of the Minneapolis Surgical Society and the Hennepin County Medical Society, Minneapolis, Minnesota, January 6, 1947.

der, a Dutch biochemist, first gave protein its name, although Magendie first noted that protein is characterized by its content of nitrogen, not possessed by carbohydrate or fat. This contribution of Magendie, however, was overshadowed historically by the studies of Lavoisier, who preceded him and Liebig, who followed him.

The early workers in nutrition felt that protein was a very important and essential element in the diet, an idea which remained unchallenged until the work of Chittenden, who not only showed that a low protein intake in normal individuals was consistent with health, but who also claimed that any increase in the protein intake was detrimental to general health. This idea was supported by the traditional view that a high protein intake is harmful in diseases of the kidneys. Because of this and other reasons, most physicians in the early part of this century tended to neglect protein as an essential part of the diet, particularly in disease.

It was only after World War I that the importance of protein was re-emphasized. This change was based upon observations of Maver and of Kohman, of Mendel and Peters, and later of Weech and others, who showed that nutritional edema was directly connected with a fall in the plasma proteins (hypoproteinemia). In 1933 Jones and Eaton first showed that postoperative edema was due to protein depletion. In the past ten years numerous observers have shown beyond question the importance of protein depletion in the production of postoperative difficulties of many kinds. We may accept as proven the importance and even the essential nature of protein intake in the maintenance of normal function, particularly during and after operation.

This does not mean that the other elements in the diet, i.e. water, energy, vitamins and salts, are not also important. Indeed, it is only by a consideration of all of them that normal physiological function may be maintained. However, the importance of calories and vitamins in particular has been so emphasized in recent years that protein needs have slipped into the background, and it will be part of my purpose to bring forward into more realistic juxtaposition its relation with the other elements. An adequate intake of this element is necessary in order to maintain normal function of surgical, and indeed, of all patients.

Relation of Body Protein to Plasma Albumin

Plasma albumin is the most important fraction of the plasma proteins as far as the physiologic function of the circulating plasma is concerned, and is involved in nutritional and other types of deficiency. Yet this protein comprises a relatively small total amount, i.e., about 150 gm. There are by contrast many thousand grams of protein in the rest of the body. The quantitative relationship between albumin and the rest of the body proteins seems to be a relatively constant one during conditions of depletion as well as during repletion. This is an important consideration because it explains the reason why such tremendous amounts of protein are necessary to correct an albumin deficiency in the blood, i.e., so much is required to replace body protein at the same time as the plasma albumin is being corrected. From the data of Weech as well as from data obtained in our laboratory, this relationship is expressed by a ratio of thirty to one. In other words, in a nutritionally protein-deficient individual, only 1 gm. out of every 30 gm. ingested and assimilated is available for the correction of hypoproteinemia. The rest is required for the correction of deficiencies in the rest of the body.

The Recognition of Protein Deficiencies

Exact laboratory methods for the recognition of protein deficiencies have been used by many workers in the field. The results may be studied by those interested in the mechanisms. They are usually too complicated for ordinary clinical use. Moreover, these laboratory methods have been used so extensively and have been correlated with such definite clinical manifestations that the average clinician need not worry about carrying them out. These laboratory methods will be merely mentioned but not described. They are (1) determination of nitrogen balance, (2) biopsy of the liver with study of its histological appearance and/or chemical composition, and (3) study of the blood including both the hemoglobin in the red cells as well as the plasma proteins.

Of the three methods mentioned above, studies of the blood have probably been the most extensive, particularly plasma protein determinations. The difficulty with such measurments is the frequency with which normal values are obtained in patients who are obviously protein-deficient. The reasons for this discrepancy are many, but have been discussed in detail elsewhere. Suffice it to say that such determinations are really not necessary and that the average clinician can meet his responsibility in most cases in a satisfactory manner, without recourse to such measurements, by knowledge of the bedside features of protein deficiency, which will now be discussed.

Acute Protein Deficiency. This type of deficiency is easy to detect from the history alone. Any patient who has lost a significant amount of protein-containing fluid will suffer from acute protein deficiency, particularly acute hypoproteinemia. It will perhaps suffice to mention the clinical conditions under which such loss occurs, noting that in many cases hemoglobin as well as plasma protein is lost at the same time. These conditions include the following: severe hemorrhage, extensive burns, intestinal obstruction, peritonitis, empyema, pneumonia, severe tissue injury, extensive draining wounds or sinuses.

In all of these conditions, it is clear that protein-containing fluid leaves the blood stream either to the outside, into the tissues, or into the body cavities. The clinical manifestations produced by such acute loss will vary with its degree and rapidity. The production of surgical shock is the most severe result of such loss, but abdominal distension from edema of the intestinal tract as well as suppression of urine from a fall in the colloidal osmotic pressure of the blood will also be observed in many instances.

Chronic Protein Deficiencies.—Here the loss of protein occurs because of tissue breakdown with excretion of urea and ammonia in the urine, and therefore may be measured by calculating the total nitrogen output in relation to the intake. Some loss of nitrogen is normal, but in certain diseases, particularly in fever and extensive trauma, this destruction is tremendous and may lead to the loss of as much as 2 pounds of muscle protein tissue a day.

The history of the case will obviously enable the physician to know whether excessive loss of protein tissue has actually occurred. But more important, a history of the dietary intake will be decisive in evaluating the degree to which such a loss has been prevented. Obtaining a dietary history is not always easy, but a serious attempt should be made, and inquiry as to the amount of milk, meat and eggs will often indicate how much or how little proein the patient has actually taken.

Bedside manifestations of chronic protein deficiency are numerous and even in absence of a history should lead the physician to a correct estimate. Loss of body weight with due regard to the influence of edema, both hidden and overt, is of obvious importance. Faulty wound healing is a late manifestation, as is the appearance of decubitus ulcers. An impaired resistance to infection and a reduction of hepatic function have also been shown to follow chronic protein deficiency. Nutritional edema is perhaps the most striking bedside evidence of hypoproteinemia; yet it varies tremendously in its appearance and disappearance, and can very seldom be correlated accurately with the level of serum protein. There are undoubtedly many factors beside protein deficiency which determine when and where nutritional edema will appear. Moreover, nutritional edema is not always visible; it occurs in the intestinal wall, thereby leading to various disturbances in gastrointestinal function, and may appear at areas of intestinal trauma as, for example, after anastomoses, and lead to symptoms of obstruction.

The early manifestations of protein deprivation are difficult to describe because they are so nonspecific. There is some evidence, however, to show that general malaise and loss of strength, particularly after operation, and usually attributed to the procedure in many instances, are due to protein deprivation inasmuch as they are often absent when protein starvation is avoided.

Therapy

It is an oversimplification to say that ordering an adequate high-protein diet will prevent or cure protein deficiencies. In the first place, special devices are frequently necessary in sick patients in order to assure an adequate intake. In the second place, the parenteral channel is sometimes needed for one or more reasons. In the following discussion treatment will be divided into the correction of acute in contrast to chronic deficiencies.

Acute Protein Deficiencies.—Therapy is usually rather simple and effective, because a transfusion of either whole blood or plasma replaces at once what is missing, and is permanently effective as long as no further losses occur. It is obviously important that these acute losses be replaced as soon as possible, and indeed in the case of bleeding at operation, the loss can be corrected almost at once. On the other hand, when the loss occurs through damaged capillaries, there is some evidence to show that correction is best made several days later, when the damaged capillaries are no longer permeable, in order to insure against further loss of the injected material. Such delay, however, is obviously dangerous when the loss has been so great as to lead to surgical shock. In such cases, the replacement must not only be immediate, but it must be rapid in order to prevent the irreversible changes which occur when the circulation remains impaired for a long period of time.

Chronic Protein Deficiencies.—There are two general features which should be emphasized. First, an adequate intake must be started at the very beginning—in other words, the first day the patient comes under our care. If protein deprivation persists, the problem becomes magnified greatly. It is much harder to correct a chronic protein deficiency than it is to prevent it. Second, an adequate protein intake cannot be left to chance nor to the usual types of dietary procedures.

The oral route is obviously the best for the administration of protein. It is not only the cheapest, but it is probably the most effective physiologically. Protein may be administered orally either in the form of whole protein separated from natural food, or as a part of natural food substances. Protein may also be administered in the form of amino acid mixtures which in some instances have advantages over whole protein—for example, when it is advisable to spare the need for digestion, which may be impaired. When the physician wishes to administer larger amounts of protein than can be assimilated in the form of whole protein, amino acids may be used, or when he wishes to combat hyperacidity, amino acids are better buffers than whole protein. It should be emphasized, however, that hydrolyzed protein must have a high biological value, and that a large enough amount must be given each day. Thus far, the taste of hydrolyzed protein preparations has been a distinct disadvantage except in the case of tube feeding.

The problem of anorexia in sick patients requires devices which permit the ingestion of a large amount of protein in a relatively small volume, preferably as liquids rather than solids. It is probably permissible to sacrifice some of the caloric requirements in order to insure a large protein intake. As a working rule, 100 gm. each of protein and glucose may be set as the probable minimum intake. By adding skimmed milk powder and pure casein to whole milk properly flavored, one may devise a palatable liquid drink which in one glass will contain about 25 to 35 gm. of protein and about 300 to 400 calories. This may then be ordered three or four times a day, and the physician thereby is assured that protein starvation will certainly not occur.

Larger amounts may be given to extremely malnourished patients. As much as 200 to 300 gm. of protein and up to 5,000 calories have actually been given to hospital patients when adequate supervision and care were provided. Tube feeding may sometimes be necessary and, of course, presents no unusual problem except for the necessity of using liquid food.

Parenteral Protein Feeding.—The parenteral route for the injection of needed protein must only be used on the most definite indications. This is so because any parenteral, particularly intravenous injection, is potentially dangerous. While the incidence of untoward reactions may not be great, they do occur and will obviously be less when this method of therapy is used least. On the other hand, the injection of protein material intravenously will permit great improvement in surgical and other care, and even be directly responsible for the saving of human life, particularly in the case of transfusions.

Protein can be injected intravenously either in the form of plasma and whole blood or as solutions of amino acid mixtures which are at present available only as preparations of hydrolyzed protein. The two forms of parenteral protein administration usually have entirely different indications but are frequently necessary in the same patient, but usually at different times.

Whole protein, in the form of whole blood or plasma transfusions, generally is indicated for the correction of acute protein deficiencies, as discussed above. Sufficiently large amounts must be given, usually a liter or more, and adequate precautions taken. In the case of chronic protein deficiency, whole blood and plasma may also be indicated, but usually are an adjunct to the use of amino acid mixtures and not the sole method of introducing protein as food.

For parenteral protein feeding, plasma is much more expensive than amino acid mixtures and has a further disadvantage of introducing protein in an unphysiological manner. It is probable that the protein thus introduced is broken down to amino acids before being utilized. By contrast, appropriate amino acid mixtures represent the physiological manner in which food protein is assimilated from the gastrointestinal tract. The use of amino acids makes it possible now to furnish an almost complete parenteral diet. Up until the introduction of hydrolyzed protein for parenteral use, such patients suffered protein starvation. Now, one may give one liter of intravenous fluid containing four of the five essential nutritional elements, i.e., water, glucose, amino acids and salt. This is possible because at least one preparation, i.e., Amigen solution, contains in one liter 50 grams of hydrolyzed protein, 50 grams of glucose and 2.5 grams of sodium chloride plus minimal amounts of other salts. As utilized by the author, 1 liter of this solution is given in the morning and one in the afternoon during periods when the patient is unable to eat. Adequate vitamins are given separately.

The indications for the use of the parenteral channel are many, including primarily those patients unable to take any nourishment by mouth, or patients in whom complete rest of the gastrointestinal tract is indicated. This includes patients with intestinal obstruction, vomiting from any cause, general peritonitis, postoperative anastomoses, certain cases of ulcerative colitis or regional ileitis, and advanced malnutrition. In addition, the parenteral route will also be utilized as a supplementary method of introducing protein nourishment in patients unable to take a large amount of protein by mouth.

The danger of reaction following intravenous injections has been studied rather widely. It is very real in the case of both whole blood and plasma transfusions, and is also present in such complex mixtures as hydrolyzed protein. In a series of 3,000 consecutive injections of Amigen solution by the author, twenty-two reactions, or an incidence of 0.8 per cent occurred, considerably less than was seen with plasma and whole blood transfusions during a similar interval. Contraindications to the injection of hydrolyzed protein are, first, any solution which is not absolutely crystal clear, and second, the development of any sign of sensitivity. Pyrogenic reactions, on the other hand, while they call for discontinuance of the injection, are not contraindications in a strict sense, since subsequent injections may be carried out without necessarily provoking a similar effect.

REPORT OF ATOMIC BOMB CASUALTY COMMISSION

A number of interesting facts relating to the Japanese who survived at Hiroshima and Nagasaki were disclosed in the report of the Atomic Bomb Casualty Commission released by the War Department at a recent press conference held in the office of the Surgeon General.

Following are some highlights of the commission's report, which was reviewed and cleared by the Atomic Energy Commission prior to issuance:

"Members of the commission have been impressed during their observations of atomic bomb survivors by the fact that many of the burns have healed with accumulations of large amounts of elevated scar tissue, the so-called keloids," said the report.

During the months of October and November, 1945, a study was conducted on 124 male inhabitants of Hiroshima. Examinations disclosed that, in 43 cases, the number of spermatocytes in the ejaculated sperm was less than 5,000 per cubic millimeter, or "absolutely sterile," in the words of Prof. Tsuzuki. Ten other cases were "relatively sterile" and the remaining 71 were normal.

"A reformation of the spermatocytes occurs in one month, so the recovery of damage to spermatocyte formation will be delayed more than that of the damage of white blood cells. The shorter the distance, the more severe was the damage. The damaging influence on the number of spermatocytes was observed in the area within a radius of three kilometers (about two miles) from the ground center. Within a radius of 2.5 kilometers there appeared some sterile cases. Within a radius of 1.5 kilometers one-half of the cases showed sterility."

Women who were in an early stage of pregnancy "have taken a normal course since the bombing," said Dr. Tsuzuki.

"It is already experimentally proved both in botany and zoology that there is a possibility of producing malformation of descendants when the sexual cells are affected in some degree by radioactive energy. The question, if this fact is applicable to the human beings or not, will be made clear by further observations.

"We have already clear evidence that the human sexual cells are also affected by the atomic bomb injuries. There is a possibility of malformation of the descendants, if the sexual cells should be affected selectively, without any severe damage to the other organs or tissues.

Heretofore, conflicting figures have been presented on the number and character of casualties at Hiroshima and Nagasaki. Dr. Tsuzuki quotes the Hiroshima prefecture as estimating, 19 days after the explosion, the dead at 46,185; the missing at 17,429; the severely injured at 19,691; slightly injured, 44,979, and other sufferers at 235,656. Six months after the catastrophe, the toll of dead and missing stood at 92,133, excluding the military dead. The total number of Hiroshima dead may be set at 100,000, according to the Japanese professor. The Nagasaki prefecture set that city's toll at 23,753 dead, 1,924 missing, 23,345 wounded and 89,025 other sufferers.—From *News Notes,* Office of the Surgeon General, April, 1947.

THE RELATIONSHIP OF INFECTIOUS AND SERUM JAUNDICE

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EPIDEMICS of jaundice are a regular war accompaniment, and the more widespread the conflict, the more civilians and military personnel fall victims. This fact has made it certain (without the added incubus of the recent war) that this form of infectious jaundice is a transmissible disease and, as such, must be distinguished from jaundice caused by drugs, toxins, degenerative and infectious processes of known bacterial origin, and neoplastic and calcific obstruction. The older term "catarrhal jaundice" is gradually yielding place to the term "infectious hepatitis." The older term greatly overstressed the factor of extrahepatic ductal swelling. Using the material from a local epidemic of infectious jaundice occurring in 1944, Fee and Tuohy[44] reported a high incidence of this type, and by profile studies of various laboratory procedures (with special emphasis upon information provided by quantitative urobilinogen estimations in the stool and urine) they established means of differentiating intra- and extra-hepatic jaundice.

The accepted entity of infectious jaundice provides a needful opportunity for clinicians to familiarize themselves with the habits and propensities of viruses in general: their immunological identification, selective localizations and the mechanisms of natural defense of the host. Since biological inhibiters and mold extracts are known to lack specificity in most bowel infections, the maintenance, for example, of the gamma globulin fraction of the circulating and tissue plasma, with a background of a good functioning liver, becomes paramount. Furthermore, behind this liver adequacy stands a sufficient diet with suitable protein content. Now that a general consensus obtains as to the transmissibility of the jaundice virus (of various types), many papers and reports are in the current literature dealing with the routes of entrance into the host, and how defense against the virus may be planned. Identification of the virus comes first to mind: whether one common virus accounts for this transmissible type of jaundice, or whether there are several distinct or possibly related forms. Since the morphological tagging of viruses is still far behind that of living bacteria, measures other than morphological identification are utilized.

Another form of intrahepatic jaundice, also closely identified with the events of the war and known as "homologous serum jaundice," is presently furnishing many fruitful studies. It first got prominent attention after some of the earlier military recruits were vaccinated for yellow fever. Later on as transfusions of banked blood and the giving of plasma became routine procedures on the battle field, this type of jaundice in some areas exceeded the totals of infectious jaundice where no transmission via the route of human blood could be incriminated. Lest it be assumed that this only concerns the armed forces in action or in the various hospital cantonments, the writers wish to report two cases of homologous serum jaundice, one terminating in death, with the same subacute liver atrophy so well described by the various authors reporting their military experience. In each instance these women developed their jaundice sixty to eighty days after abdominal operations, in the course of which blood transfusions were given as precautionary measures.

Doubtless, since the termination of war, there has been less and less epidemic jaundice. The usual caution of directors of blood banks will, of course, dictate the rejection of all donors with recent illnesses, not to mention previously jaundiced persons.

One of the authors (J. R.) has reviewed the extensive literature bearing upon the relationship between infectious hepatitis and serum jaundice. This digest is offered in an attempt to find out how much these entities have in common and wherein they differ. It is hoped that the reader will find stimulation and understanding in reviewing what our active medical men have been able to accomplish in this field of research despite the overwhelming difficulties and confusion of a military service spread around the world. World War II has provided much material for

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these various studies. Since routine epidemic and endemic infectious jaundice has long been studied, the liver damage associated with serum jaundice has been conspicuously stressed.

The following primary aims are set forth in attempting to group the recent studies: (1) to establish with certainty the entity of homologous serum hepatitis; (2) to catalogue the consensus of opinion as to its experimental reproduction; (3) to point out the likenesses and dissimilarities of homologous serum hepatitis and infectious hepatitis, and (4) to demonstrate in the last analysis that the "artificial" disease has a higher mortality rate, longer incubation period, and a reduced element of contagion.

Transmission of Infectious Hepatitis Via Natural and Experimental Routes

Since infectious hepatitis occurs in well-known epidemics, many studies attest the correctness of this clinical inference.[3,9,11] The agent is present in the blood stream before the onset and during the jaundice; it is also present in the feces and possibly in the nasal washings in the acute stages.[19] MacCullum and Bradley,[24] Havens et al[20] used such material establishing effective proof of transmissibility. The latter group fed nine volunteers samples of infectious sera or feces, producing the disease in five after an incubation period of from twenty to eighty-four days (average thirty-seven days). Neefe and co-workers[32] fed pooled specimens of feces from patients with infectious hepatitis to twelve volunteers, hepatitis occurring within twenty-six days in six of the twelve subjects. They were able to prove conclusively, using infectious materials from an epidemic at a boys' and girls' summer camp near Philadelphia, that the agent responsible for the epidemic was water-borne. This experiment appeared to them to be the first satisfactory evidence of the natural water-borne transmission of a virus disease to man.

The traditional use of laboratory animals as vectors or intermediary hosts has met with failure because animals are refractory. Cameron,[5] Paul et al,[37] Findlay and Martin,[13] Oliphant and coworkers,[36] Sawyer and his group,[40] and others made such attempts without infecting the animals used. The work of continental European investigators indicating positive results lacks confirmation in this country.[37] Recently MacCallum and Miles[25] rechecked the question of animal transmission. Inoculating Wistar rats, that had been placed on a diet deficient in protein, with blood and feces of infections hepatitis patients, followed by nine blind passages of tissues of these rats, these men were able to produce liver necrosis, and/or hemorrhage into the lymph nodes, gastric and intestinal walls and tissues of the lung. Thus these studies suggested to them that they were dealing with a transmissible disease caused by a virus, and hinted that hypoproteinemia in their animals made their livers susceptible. Bearing this new evidence in mind, one finds clinical support in the recent report of Snell, Wood, and Meienberg.[41] They studied thirty-two cases of serum jaundice occurring on an average of eighty-four days following military trauma. All had received blood or plasma after injury. The mortality rate was relatively high—19 per cent. The seriousness of the course of the disease in wounded men was attributed by them to a nutritional depletion which added to their vulnerability.

Serial passage of the disease in man has been reported on two occasions.[18,19] By using the human volunteer technique some of the properties of the agent have been determined.

1. Both the icterogenic agent in homologous serum jaundice[36] and that of infectious hepatitis[18,19] have been found to be heat resistant at 56° C. for one-half hour and also to pass bacteria-tight filters.
2. As in serum jaundice, the agent is present in the blood stream during the active phase.[5,19,24]
3. Its presence in the feces[14,19,24] and urine[14,46] has been similarly demonstrated.

Numerous substances have been used in the production of infectious hepatitis by the oral route. Voegt[46] claimed to have caused the disease successfully by oral administration of duodenal fluid, urine, and hemolyzed red blood cells. MacCallum and Bradley,[24] by feeding infectious feces to volunteers suffering from arthritis, claim to have produced the disease, although their results with nasopharyngeal washings were less convincing. Havens and co-workers[19,20] added weight to these observations by their studies of material secured from American and British troops in the Middle East and Mediterranean area. They gave fecal material in capsules, as well as urine and stool extracts, which had been filtered and dried. Two of three volunteers contracted jaundice after twenty to twenty-two days.

A number of reports emphasize the parenteral route as a means of producing the disease. Cameron,[5] using serum and whole blood secured from infectious cases, produced the typical picture in six of seven volunteers by intramuscular injection. Voegt[46] (9), in an earlier monograph, and others[19,24,36] using various parenteral routes reported similar results.

Homologous Serum Hepatitis

Homologous serum jaundice, a highly artificial entity, presents a more difficult problem in etiology. By definition, it is a form of hepatitis which usually occurs from six weeks to six months after the injection of certain samples of whole blood, serum, or plasma.[22] It implies that blood drawn from a nonjaundiced individual, or from one not known to be ill at the time, has gone into a blood bank pool. There is no doubt in the minds of many students of liver pathology that this entity has been commonly overlooked in the differential diagnosis of hepatitis; and with the greater use of blood and blood products (especially in view of the early release of excess armed forces plasma) this question becomes even more important. Peculiarly enough, serum jaundice has not been observed as yet after the injection of normal serum albumin and normal serum gamma globulin which were derived from 250 to 5,000 bleedings pooled for plasma fractionation.

The literature is replete with reports that the disease has been associated with the use of prophylactic measles serum.[26,28,29,38] MacNalty[26] observed jaundice among thirty-seven of eighty-two to 109 persons who had received this substance from the same material pool. Propert[38] reported not only that seven children developed jaundice after injection of convalescent measles serum but that there was definite evidence that two playmates developed jaundice approximately two months after contact with the injectees! Mumps serum has also been implicated.[2,27,28,31] One study[27] noted that hepatitis developed in 101 of 266 men inoculated with mumps convalescent plasma. Yellow fever vaccines in human serum drew especially widespread comment and attention due to the experiences of the United States Army[6,7,8] in 1942. Findlay, Martin, and Mitchell,[16] in an intensive study of 689 cases of yellow fever vaccine hepatitis, occurring in military personnel during World War II, stressed the importance of the clinical, pathological, etiological, and epidemiological features. Great emphasis was also placed on four cases suffering from post-inoculation hepatitis without jaundice, suggesting to them the greater need for consideration of hepatitis occurring in a forme frustre without recognizable jaundice. More emphasis, then, must be placed on serum hepatitis *sine ictero* in living subjects. Turner[45] and his colleagues carefully studied 4,083 cases of post-inoculation hepatitis at Camp Polk, Louisiana, the hepatotoxic agent being present in yellow fever vaccine, lot 369. The clinical picture with especial reference to the nervous system manifestations in severe cases was stressed. Other studies[12,15,17,36,42] have added further data to our increasing knowledge of post-inoculation hepatitis.

Reports dealing with the experimental injection of some of these sera are of interest. Oliphant[36] experimentally produced jaundice in volunteers by inoculation of two lots of yellow fever vaccine containing pooled serum, and also by inoculation of serum from eleven patients who had previously received yellow fever vaccines carried in human serum. Evidence was also presented that the icterogenic substance was absent from the blood stream two and one-half months after the disappearance of the jaundice. They made the novel observation that this agent might be neutralized with ultra-violet radiation.

Beeson[1] reported that seven persons who had received transfusions of blood or plasma at the time of an injury or surgical operation developed jaundice one to four months after the transfusion. Steiner's experiences add to these reports.[43] Rappaport[39] observed thirty-two cases of jaundice in military personnel following transfusion with plasma or blood. He opined that, apart from infectious hepatitis, transfusions may serve as the commonest current cause of jaundice in the armed forces. Jaundice due to plasma or serum has been further noted in scattered reports.[4,28,29,34] Neefe and others[34] related the 100 per cent occurrence of hepatitis in nine men inoculated experimentally with plasma or yellow fever vaccine containing human serum. Bradley, Loutit, and Maunsell[4] discovered that 57 per cent of their cases developed jaundice forty-nine to 107 days after infusion with pooled serum. Morgan and Williamson[29] commented on the fact that 18 per cent of their patients developed jaundice forty-nine to 107 days after transfusion of liquid pooled plasma or reconstituted dried serum.

The agent of serum hepatitis produces jaundice inconsistently when administered by the parenteral route. Oliphant and co-workers, using yellow fever vaccine and serum for vaccine-induced jaundiced persons, caused the disease to appear in thirty of 189 cases tried. MacCallum and Bauer observed two cases of jaundice when five volunteers were studied. Neefe[34] reported varying results with the inoculation of mumps convalescent serum, mumps passage material, and yellow fever vaccine. Paul[37] and others, reported a higher incidence of positive takes.

Serum jaundice has been transmitted in one case[23] by feeding serum and in three cases in which the icterogenic serum was swallowed accidentally by laboratory workers.[41] On the whole there is basic agreement by most observers that the oral administration of feces from homologous cases of serum hepatitis does not produce hepatitis. There is some evidence that nasopharyngeal washings carried the etiologic virus.[13] One is hard pressed to explain the observations of two authors[34,38] who felt that through contact with patients suffering from serum hepatitis, four persons developed a jaundice that did not appear to them to be the epidemic type. Were these true contact cases?

Differences of the Disease Entities

Thus, the problem of similarity or dissimilarity of the agents of serum and infectious hepatitis, despite all this research, still retains some secrets. The similarities have been commented upon; the differences remain of prime interest. Many investigators have emphasized that the death rate is higher in serum hepatitis than the 0.2 to 0.4 per cent characteristic of infectious hepatitis. Neefe et al[33] point out the fact that the temperature in infectious hepatitis usually is observed to be above 100°F. (orally), while that of serum jaundice usually does not exceed 100°F. Further they emphasize the fact that the incubation period in the artificial disease is prolonged sixty or more days. However, one must continually make allowance for the variable icterogenic "capacity" of the sera used which may well explain the variation in rates at which serum jaundice is produced as well as the difference in length of incubation period. Transmission differences require consideration. Multiple routes in experimental transmissions are common in infectious hepatitis, while efforts at feces transmission of serum hepatitis have generally met with failure[32]—hence the observation that it is not a relatively contagious disease.

The Problem of Homologous Cross Immunity

Since a number of investigators do not believe that the aforementioned criteria are sufficiently adequate for differentiation, antigenic studies involving immunity and cross immunity techniques have been utilized.

There is general consensus that a single attack of infectious hepatitis produces a degree of immunity.[5,16] Further, the infrequency with which this lesion occurs after thirty-five years of age suggests an age-acquired immunity, or an apparent subclinical childhood attack. Neefe and his group[33] have demonstrated experimentally that immunity to serum jaundice following infectious hepatitis does exist, while volunteers were found to be resistant to reinfection with the infectious hepatitis type up to at least eight months after recovery from hepatitis which had been induced by the same agent.

Homologous immunity in serum hepatitis has been discussed by Oliphant[35] who reinjected ten persons with yellow fever vaccine twelve to eighteen months after hepatitis had been induced by inoculating yellow fever vaccines or samples of similarly induced icterogenic serum. Ten normals were used as controls. Three of the latter developed hepatitis while none of the test group were so afflicted. Neefe[33] confirmed this view.

The data on cross immunity, however, leaves much to be desired. The assembled data presents conflicting conclusions. One investigational group[27] reported that of an army unit of 175 men developing serum hepatitis following prophylactic inoculation of a mumps convalescent serum, eleven of these cases had a history of "catarrhal" jaundice in childhood. Another group[16] was impressed by the apparent reduced susceptibility to serum hepatitis of persons who had previously had the infectious type. In striking contrast, Witts,[47] quoting Gordon, stated that previous homologous serum hepatitis might actually increase susceptibility to infectious hepatitis. Oliphant's[35] view that "recovery from homologous serum jaundice results in immunity to reinoculation with serum from acute cases of infectious hepatitis or with icterogenic yellow fever vaccine and that the immunity persists for at least twelve to eighteen months" has been challenged. Lack of data as to the age of the subjects seems to nullify the above observation on the basis of decreased susceptibility to infectious hepatitis of persons over thirty-five years of age.

These recent investigations concerning cross immunity might be considered as pioneer work. Currently, Neefe and co-workers,[33] further exploring the problem, conclude that the hepatitis which occurred in the serum hepatitis resistant test group (five cases), following inoculation with infectious hepatitis test material, was not due to "reactivation of the serum hepatitis agent, to reinfection with that agent after disappearance of the previously demonstrated resistance or to breakdown of that resistance by an overwhelming dose of the same agent." Rather they felt that the hepatitis was due to the infectious material with which the cases were reinoculated. The absence of cross immunity suggested to them a difference either on the basis of an antigenic variation in strain of a single type of virus agent or on the basis of two different types of virus agents. These researches bring up the possibilities of various strains of virus as is well known with the higher bacteria.

Summary

1. Despite the difficulty objectifying virus types, these known forms of hepatitis are accepted as viral in origin and are just as definite etiologically as is measles or small pox.

2. Homologous serum hepatitis brings in a route of human transmission that involves the provinces of vaccine prophylaxis and human blood or serum replacement.

3. Paul and Havens[37] and Neefe and Stokes[32] have commented upon the relationship existing between the causal virus of serum jaundice and infectious jaundice and think they are distinct. It will be recalled that all viruses may have common propensities.

4. There is no need of denying anyone needed blood, plasma or serum; but the relatively small chance of transmitting serum jaundice should tighten up the indications for transfusions and the careful survey of donors for blood banks.

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A PLAN FOR THE DETECTION OF THE SOURCE OF RECTAL BLEEDING

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BLEEDING from the rectum, either as the patient's chief complaint or as one of several symptoms, is of common occurrence. It is frequently disregarded, judged as meriting little concern, but it should always be investigated since it may be the first evidence of malignant disease. The source is to be found and, if possible, eradicated. If this is impossible, one should at least be able finally to assure one's self and the patient of the absence of serious disease. One of the reasons for the frequent neglect or mistreatment of individuals with this complaint is the lack of a plan in the search for its cause.

A PLAN FOR THE DETECTION OF THE SOURCE OF RECTAL BLEEDING

I. History
II. Inspection.
III. Digital examination.
IV. Anoscopic examination.
    A. Cause found and easily remedied.
    B. Cause found requiring lengthy or extensive treatment
    C. Cause not found.
V. Proctoscopic examination.
    A. Cause easily remedied.
    B. Lengthy or extensive treatment.
    C. Cause unfound.
VI. X-ray of colon.

In a recent and very complete article on the subject, an author states that "a complete proctologic study including proctosigmoidoscopic examination, examination of the stools, and an x-ray of the colon" should be done for all patients with rectal bleeding. Now the plain fact is that this is not necessary for all patients of this type, and, while every practitioner knows this, often he is not certain as to the one in whom it is necessary. The same writer lists some seventy conditions which produce blood in the stool, leaving the reader's mind filled with a bewildering confusion of causes but with few concrete suggestions as to how to proceed. If his rule is followed—and much the same advice is given in most articles on this subject—many patients will be subjected to arduous and unnecessary investigation and expense. On the other hand, if it is not followed, some very serious conditions may remain undiscovered. With the above in mind, I have attempted to arrange a graphic representation of the methods I have for years more or less automatically followed. Before proceeding further, I might say that this discussion does not apply to those persons with massive rectal hemorrhage and in whom the primary concern is the treatment of shock and blood loss.

In all cases involving rectal bleeding, a careful history is of value and is occasionally diagnostic of itself. Is the blood bright or dark, liquid or coagulated? Is it passed unaccompanied by, or mixed with, the stool? Is it merely on the toilet tissue? Estimates by the patient of the amount of blood passed are to be evaluated with caution, but often one may get some idea of the quantity. Do the bowels move daily and as usual for that particular patient, or has there been a definite change in bowel habits? If constipated, what measures have been undertaken to overcome it, and are they successful? If the bowels move frequently, is the movement an actual stool or does it simply represent an urge to move the bowels, producing blood, gas, and a semi-liquid material? Does the bleeding have associated with it itching, burning, or prolapse? If there is pain, what type is it and how long does it last? For example, a sharp cutting pain experienced at the moment of passing the stool and continuing for several hours afterward, gradually becoming less severe, together with streaking of blood, is almost pathognomonic of fissure. How long has the bleeding been going on and does it occur daily? A history of a change in bowel habits of from one or two movements a day to several bloody and watery discharges, to-

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gether with weight loss, is of course suggestive of malignancy in a person of middle age. On the other hand, the same story in a young individual is more likely to be an ulcerative colitis. The patient with a story of something protruding after stool, which he is able to replace himself, in all likelihood has no more than prolapsing piles. The search for anything is made much easier by a knowledge of what to look for and where to look, and careful questioning will frequently bring out clues as to both.

Inspection

This should be done with the patient in the left lateral or Sim's position, with a good light, cotton swabs, applicators both loosely and tightly wrapped, probes, a waste basket for the convenient disposal of used material, and a stool for the examiner to sit on at a convenient level in relation to the patient. Most of the things needed for a competent rectal examination are part of every physician's equipment, but unless arranged for a rectal examination, oftener than not, they are not conveniently accessible. I may appear to be stressing a minor point, but I firmly believe that the difference between a very good rectal examination and a very bad one may depend on no more than this. There are a number of conditions causing bleeding which may be seen on inspection. Anal condylomata, an excoriated pruritic skin, minor injuries, or a true anal fissure or ulcer may be the source of blood seen on the toilet paper. A ruptured abscess or the external opening of a fistula, prolapse, prolapsing hemorrhoids, a prolapsing polyp, or an epithelioma of the anus may be easily seen. The common anal fissure in the anterior or posterior commissures may be diagnosed by inspection only, and if a bleeding fissure can be seen by simply everting the anal opening and looking, there is no point in making proctoscopic examinations or taking x-rays. In fact, there is little reason in looking for anything the hard way if it can be found by the easy way first.

Digital Examination

Regardless of the patient's story or the findings on inspection, all these people should have digital examinations. That this point needs to be impressed is remarkable, but experience proves that it does. Too many individuals are given advice and treatment without benefit of examination. The patient should be in the Sim's position with the examiner first seated on the stool, and then standing. The flexor surface of the finger should be directed forward, and then with the examiner standing, it should be directed toward the sacrum, at which time the finger can be made to pass into the rectosigmoid junction in most patients. It is quite impossible to do this with the finger directed forward as in an examination of the prostate. The size of the canal can be calculated and the amount of spasm estimated; if the pain is too great or the canal too small, the little finger may be used and, especially after some practice, much information may be obtained this way. Sphincter tone, abnormal relaxation, and the degree of anal fibrosis may be determined, as well as an estimate of the length of the anal canal. Masses encountered may be tumors, anal papillae, cysts, foreign bodies, including fecal impactions, and occasionally a submucous abscess may be felt. Uncomplicated internal piles cannot be felt. Following the digital examination, an anoscopic examination is to be done for all patients with blood in the stools.

Anoscopic Examination

This gives us first an appraisal of the color and texture of the anal mucosa and reveals at once the presence or absence of inflammation. A hemorrhagic proctitis or a low ulcerative colitis may be seen through an anoscope. The presence of hemorrhoids may be noted, and by rubbing them with an applicator, one finds out whether or not they bleed easily. If no blood has been seen but appears immediately on rubbing the pile, it is very likely that this same pile has bled on movement of the bowels. A pile may have bled rather freely an hour or two before examination and show no sign of bleeding at the time, but if it bleeds on rubbing, it is a likely offender. Is there a discharge and, if so, is it mixed with blood, is it purulent material, or is it mucus? The opening of a draining sinus may be seen, as may a torn crypt. We may see inflamed papillae cryptitis, internal prolapse, tumors, foreign bodies, and now and then parasites. A granulation-filled pocket in the posterior commissure sometimes is productive of blood while giving no other sign.

Having completed the anoscopic examination the question as to further investigation arises. It is either necessary or it isn't. About some patients one is certain, about others there may be some question. It is plain that, for example, a patient with a fissure that bleeds before one's eyes, and whose history suggests nothing else, does not require a proctoscopic examination and an x-ray of the colon. Neither does one with a fecal impaction or a granulating pocket in the posterior commissure. Cancer of the rectum itself has already been ruled out by the digital examination. Further examination may be deferred if the bleeding cause has been found and in addition if it can be corrected easily and quickly and with the loss of little time. Which patients then require a proctoscopic examination?

Proctoscopic Examination

Of all these people, those with obvious and easily corrected conditions may be eliminated at least for the time being, from our consideration. The second group consists of those in whom the source has been found but where the remedying of the condition requires lengthy treatment or extensive surgery. For example, though a patient has obviously bleeding piles, he should have a proctoscopic examination before operation, since even a hemorrhoidectomy is too extensive a procedure to undertake before eliminating the possibility of an accompanying carcinoma. On the other hand, if the bleeding can be stopped by means of three or four injections of quinine and urea hydrochloride into the hemorrhoidal area, little time will be lost, and if additional bleeding occurs from another source, further investigation may be carried out. Do not prolong treatment and do not subject the patient to an extensive operation without having done a proctoscopic examination. The third group in which a proctoscopic examination is to be done is, of course, that in which the source of bleeding has still not been discovered.

Proctoscopic examination should be done before, and not following an x-ray study of the colon. In a large proportion of patients with rectal or colonic disease, the diagnosis may be made by digital, anoscopic, and proctoscopic examination, without recourse to the barium enema and x-ray. On the other hand, not infrequently a patient is dismissed on the basis of negative x-ray findings alone, while having a tumor which, although justifiably missed by x-ray, can be seen by the proctoscope or felt by the finger. Proctoscopic examination should be done following preparation by means of a plain water enema and, if desired, may easily be done in one's office. Unless one confines his work to proctology, he is unlikely to have a proctoscopic table, but the procedure may be carried out satisfactorily on the ordinary examining table with the patient in the knee-shoulder position. Through the proctoscope the color and texture of the mucosa is noted, and the presence or absence of inflammatory change or of ulcers may be visualized. Anomalies in the size and direction of the lumen, varicositis, endometriosis and tumors may be seen. Blood may be seen and, if the examination is made carefully, it sometimes can be clearly seen to be coming from higher up in the sigmoid than the area being viewed. It is clear that there will be a number of patients in whom, up to this point, no bleeding source has been found, who will now, by means of the proctoscope, be eliminated as candidates for further investigation. Certain conditions will become apparent, suggesting definite lines of treatment of longer or shorter duration, or operative procedures of greater or lesser extent. Which patients should be subjected to examination by means of the x-ray?

Again we have each patient falling into one of three classes. The first class consists of those in whom the bleeding point has been found and is easily corrected. A patient with a hemorrhagic proctitis limited to the rectum, for example, need not have a colon film. If treatment can be easily and quickly carried out, x-ray may be deferred for the time being, and if no recurrence of the bleeding is noted, it need not be done at all. A polyp in the rectum is one of the few findings which merely show that my plan is not an inflexible one. Rectal polyps are accompanied by polyps beyond the proctosigmoidoscopic area in 50 per cent of cases; thus, even though a bleeding rectal polyp is found, x-ray of the colon should be done. The second class is made up of those patients in whom the source has been found but who require prolonged treatment or extensive surgery for its correction. The third class is made up of those in whom, as yet, the source of bleeding is still undiscovered.

The above represents an attempt to plan the investigation of patients complaining of rectal bleeding in such a way that, as we pass to the more complicated procedures, a patient is not dismissed at any point without due consideration for his safety. It is an attempt to go always as far in the investigation as we should for security's sake and, yet, not to undertake needless procedures.

THE CRUVEILHIER-BAUMGARTEN SYNDROME

Report of Case

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PORTAL hypertension, regardless of its cause, results in the development of collateral circulation if it exists long enough and is severe enough. The principal venous communications which may develop to relieve portal hypertension are as follows:[5] (1) The collateral pathways between the gastric veins and the esophageal veins may develop; when these develop excessively, the esophageal varices so frequently encountered in cases of portal hypertension appear. (2) The veins of the colon and duodenum may develop communications with the left renal vein. (3) The accessory portal system of Sappey may play a part in the collateral circulation. Branches pass in the round and falciform ligaments to join the epigastric and internal mammary veins and the azygos vein through the diaphragmatic veins. Occasionally a single large vein may pass from the hilus of the liver to the umbilicus by way of the round ligament. The development of this pathway produces the well-known caput medusae in the periumbilical region. Usually this large single vein is a markedly dilated parumbilical vein; more rarely it is a patent umbilical vein. (4) The intestinal veins may communicate with the inferior vena cava or its branches, by way of the veins of Retzius. (5) Communications between the inferior mesenteric veins and the hemorrhoidal veins may be used. (6) Rarely a collateral pathway between the portal vein and the inferior vena cava by way of a patent ductus venosus may be established.

Another collateral pathway may be established occasionally through the interposition of a small patent upper portion of the umbilical vein, the "Rest-Kanal" of Baumgarten, between the portal system and the epigastric veins as discussed by Armstrong and his associates.[1]

In 1835 Cruveilhier[4] commented on a case previously reported by Pégot[6] in which signs of portal hypertension and dilated abdominal veins with a caput medusae, as well as a parumbilical venous murmur were present. The significant findings at necropsy were (1) a small grossly normal liver, (2) a large indurated spleen and (3) a persistent and dilated umbilical vein. In 1907 Baumgarten[8] reported a case in which the clinical and pathologic findings were similar to those reported by Cruveilhier. In Baumgarten's case microscopic studies of the liver revealed only minimal periportal fibrosis and no true cirrhosis. Baumgarten suggested that patency of the umbilical vein and congenital hypoplasia of the liver and portal system might be the underlying etiologic factors of the clinicopathologic picture described.

To date more than sixty cases of Cruveilhier-Baumgarten disease, Cruveilhier-Baumgarten syndrome and Cruveilhier-Baumgarten cirrhosis have been reported.

In 1942 Armstrong and his co-workers[1] carefully reviewed and analyzed the fifty-three cases which had been reported up to that time and presented two cases of their own. They suggested that the term "Cruveilhier-Baumgarten disease" be reserved exclusively for those cases in which the original criteria of Cruveilhier and Baumgarten were satisfied. These consist of the clinical picture of portal hypertension with excessive umbilical circulation and the necropsy findings of a patent umbilical vein, atrophy of the liver with little or no fibrosis, and usually splenomegaly. These findings may possibly represent a distinct disease entity. They also proposed that the term "Cruveilhier-Baumgarten syndrome" be used to designate a larger group of cases in which the same clinical picture of portal hypertension with excessive umbilical circulation is present, but in which other underlying disease processes are responsible for the clinical picture.

Armstrong and his associates found that only six of the fifty-three cases previously reported and one of their own cases satisfied the original criteria of Cruveilhier and Baumgarten and could be called cases of Cruveilhier-Baumgarten disease. In the rest of the cases the clinical picture of portal hypertension with evidence of excessive umbilical circulation in the form of abdominal murmurs or thrills was present. In some of these cases, however, the portal hypertension was the result of such conditions as cirrhosis of the liver, vascular occlusion or anomaly, or the umbilical vein was not patent and the collateral circulation in the umbilical region was through other chan-

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From the Mayo Foundation, Rochester, Minnesota.

nels. In others the patients were still living at the time their cases were reported, permission for necropsy had not been obtained or the descriptions of the findings at necropsy were inadequate for evaluation.

Since the review just mentioned, at least six more cases[2,3,7,9,10] of the clinical syndrome have been reported, only one of which can be considered as belonging to the group of cases of bona fide Cruveilhier-Baumgarten disease. Thus if this group of cases does represent a distinct etiologic and clinicopathologic disease entity, it is certainly one of rare occurrence since only eight cases have been reported to date to my knowledge.

Report of Case

A white man, a mechanic, twenty-three years old, was first seen at the Mayo Clinic on April 15, 1942. For two years prior to registration he had been employed in an aircraft factory where he had been exposed every few days to various industrial solvents, including carbon tetrachloride, benzene and acetone. In July, 1941, lassitude, mild anorexia and general loss of pep were noted. In February, 1942, he left his job to go to Arizona and to do outdoor work. The symptoms just mentioned cleared rapidly and he felt essentially well for about a month. In March, 1942, nausea, anorexia and diarrhea developed rapidly. Two days after onset he suffered from a fairly severe bout of cramplike abdominal pain, and he began to note abdominal enlargement. Exploratory laporatomy was performed elsewhere. Two gallons (8,000 c.c.) of ascitic fluid were removed and cirrhosis of the liver was found. The ascitic fluid continued to form, and edema of the ankles developed. Paracentesis was performed on two occasions, the last one on April 6, 1942. During the nine days prior to registration at the clinic, ascites was considerably less marked and seemed to be progressively diminishing.

The past history, family history and review of systems were noncontributory.

The patient was well developed and well nourished. He weighed 163 pounds (73.9 kg.). The blood pressure was normal. The liver was enlarged to 2 to 3 cm. below the right costal margin. The spleen was not palpable. There was probably a small amount of free fluid in the abdomen. Peripheral edema and icterus were not noted. Several spider angiomata were present on the hands and arms. The veins of the upper part of the abdomen were enlarged only a little, if at all. A slight thrill could be felt over the lower end of the sternum, and a rough blowing murmur could be heard in this region. This murmur was loudest on inspiration and it was almost abolished by expiration.

Results of urinalysis, determination of concentration of hemoglobin, erythrocyte count, differential blood count, blood smear, routine serologic tests for syphilis, and roentgenograms of the chest were all within normal limits or were negative. The value for serum bilirubin was 3.0 mg. per 100 c.c. and the van den Bergh reaction was indirect. The value for the cholesterol varied between 123 and 175 mg.; that for cholesterol esters was 77 mg., for lecithin 214 mg., for fatty acids 275 mg. and for total lipoids 394 mg. per 100 c.c. of plasma. The prothrombin time was 22 seconds as compared to an average normal of 18 seconds. The sulfobromophthalein test of liver function revealed a grade 2 retention of dye, on the grading basis of 1 to 4. The sedimentation rate of erythrocytes was 1 mm. at the end of one hour by the Westergren method. Urobilinogen was found to be present in the urine in dilutions up to 1:8. None was present in dilutions of 1:16.

The patient was instructed in the use of a high carbohydrate diet and vitamin supplements and was dismissed.

The patient returned to the clinic on July 9, 1942, for a checkup. He was feeling well, he could wear his old clothes, and he thought the fluid had left the abdomen. He had noted edema of the ankles on only one occasion while on a long bus trip. His only complaint was of a mild discomfort in the right upper quadrant of the abdomen immediately after eating. He weighed 179 pounds (81.2 kg.). Physical examination at this time revealed no free fluid in the abdomen. The liver was enlarged and could be felt 2 to 3 cm. below the right costal margin. The spleen was not palpable. There was no telangiectasia. The urine was normal. The value for bilirubin was 1.9 mg. per 100 c.c. of serum and the van den Bergh reaction was direct. The prothrombin time was 21 seconds as compared to an average normal of 19 seconds. A sulfobromophthalein test of liver function revealed a grade 2 retention of the dye. The patient was dismissed with instructions to continue his dietary regimen and the taking of vitamin supplements.

The patient was not seen again until June 6, 1945. He had felt well after his last visit to the clinic until May 13, 1945. He had worked full time and had had no evidence of ascites or edema. He had not been exposed to industrial solvents except for a short period in December, 1944, when he had overhauled an airplane and inhaled fumes from what he called "dope" and "thinner," containing ethyl and methyl alcohol, acetone and benzene. On May 13, 1945, he suddenly vomited some material that looked like coffee grounds and passed a tarry stool. He did not faint and transfusions were not necessary. He was hospitalized in his home community. One week later he noted a rapidly developing, large abdominal swelling. This proved to be due to ascites, and paracentesis was done three times before his return to the clinic. The intravenous use of mercurial diuretics was without benefit. He had no other symptoms except those associated with the volume of his ascites.

On admission the patient weighed 169 pounds (76.7 kg.). He was well developed and well nourished. Blood pressure was normal. Physical examination of the chest revealed slight elevation of the diaphragm on both sides. The abdomen was greatly distended, globular and tense. A fluid wave was elicited. The liver was enlarged to 4 cm. below the right costal margin. The spleen could not be palpated. There was slight edema of the legs, scrotum and penis. Over the lower part of the thorax and upper and lateral parts of the abdomen the superficial veins were dilated (Fig. 1). A thrill was felt in a region measuring about 2 cm. in diameter over the lower end of the sternum and xiphoid process. A loud continuous venous murmur could be heard over this and a surrounding region measuring about 6 by 9 cm. This murmur had a rushing, almost whistling character that could be compared to the sound of wind. It was greatly increased by deep inhalation and was partially subdued by forced exhalation (Fig. 2).

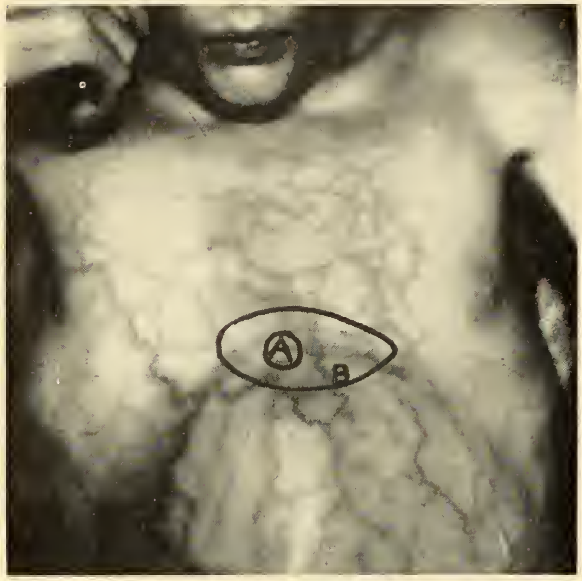

Fig. 1. Dilated venous channels. *A* is region where the thrill was palpable. Large ellipse, *B*, is region over which the murmur was heard (infra-red photograph).

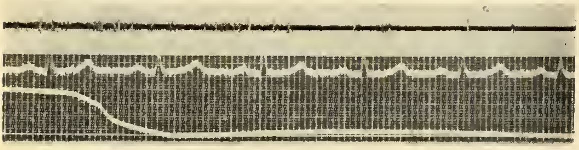

Fig. 2. Stethogram of the abdominal murmur. The top tracing is the sound recording. The middle tracing is the electrocardiogram and the lower one is the respiratory tracing.

The urine was normal. The concentration of hemoglobin was 14.9 gm. per 100 c.c. of blood. Erythrocytes numbered 3,810,000 and the leukocytes 4,700 per cubic millimeter of blood. Roentgenograms of the chest revealed no abnormalities. Roentgenoscopic examination of the esophagus revealed esophageal varices. Proctoscopic examination revealed no varices or hemorrhoids. The value for the blood urea was 36 mg. per 100 c.c. The value for the cholesterol was 123 mg., for the cholesterol esters 62 mg., for lecithin 189 mg. and for fatty acids 156 mg. per 100 c.c. of plasma. The concentration of protein was 5.4 gm. per 100 c.c. of serum and the albumin-globulin ratio was 1.27:1. A sulfobromophthalein test of liver function revealed retention of the dye, grade 3. The prothrombin time was 25 seconds as compared to an average normal of 18 seconds.

For twenty-one days the patient was on a conservative program of 4 mg. of synkamin (vitamin K) by mouth daily, rest and a high-carbohydrate, high-protein, low-fat diet with vitamin supplements. At the end of this period the prothrombin time was 23 seconds and the patient's condition had not changed essentially. Paracentesis was carried out three times in the course of the twenty-one days because of the rapid accumulation of ascitic fluid. The amount of fluid obtained varied between 4,500 and 7,600 c.c. The fluid was clear and straw colored with a specific gravity of 1.011 and it contained 250 cells per cubic millimeter. Abdominal exploration, which was carried out on June 28, 1945, revealed a large hobnail liver and a firm spleen enlarged to about six times the normal size. The spleen and peritoneum were not adherent. Microscopic examination of a specimen removed from the liver revealed portal cirrhosis (Fig. 3). A large, single, dilated vein was found in the falciform ligament. It could not be definitely established whether this was a patent umbilical vein or a paraumbilical vein. Omentopexy was performed.

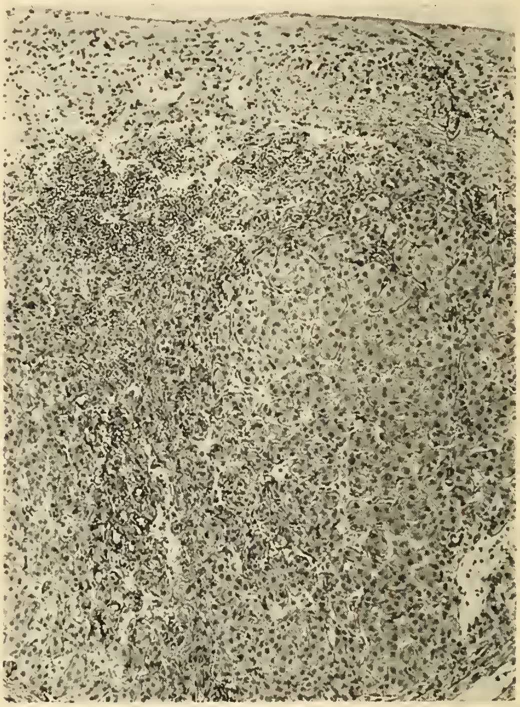

Fig. 3. Cirrhosis of liver (x80).

Comment

Many cases will appear which can be placed accurately in the group with Cruveilhier-Baumgarten syndrome by virtue of definite evidence of disease processes, such as hepatic cirrhois.

(Continued on Page 534)

SULFADIAZINE GRANULOCYTOPENIA AND THROMBOCYTOPENIA COMPLICATING PREGNANCY WITH SURVIVAL

Report of a Case

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THE ROLE of sulfonamides in the production and treatment of agranulocytosis needs further clarification. The neutropenia due to sulfonamides has been classified as an acquired type of allergic as well as specific phenomenon. It is apparent that severe and frequently fatal agranulocytosis may result from the prolonged or intermittent use of sulfonamides. Park[8] is of the opinion that the agranulocytosis due to a sulfonamide drug occurs after an initial sensitizing dose to which there is no reaction. An incubation period of from six to twenty days follows, after which continued use of the drug will result in an allergic reaction characterized by suppression of bone marrow. It is pointed out that large doses over short periods of time (not over one week) will not result in a drug allergy, as will a smaller dosage over a prolonged period of time. When sulfonamides are given for a period of over one week, the patient should be closely checked with daily blood counts, and the drug discontinued if a neutropenia develops. The sensitivity to the drug may be of short duration, and in some cases after recovery from a sulfonamide agranulocytosis the drug may again be used without the production of neutropenia.[1] However, should the sulfonamide be used again, it should be given in ascending doses and with careful hematological control. Patients sensitive to one of the sulfonamides are not necessarily sensitive to another sulfonamide.

The patient with agranulocytosis does not die because of lack of granulocytes *per se,* but due to sepsis developed secondarily in the absence of granulocytes. Cases in the literature[7] have been reported in which sulfonamides have been continued in the face of severe agranulocytosis. If the sepsis was controlled, the bone marrow recovered its ability to produce granulocytes, with a favorable outcome. However, if possible, the toxic agent should be discontinued and another antibiotic substituted to control or prevent sepsis.

At present the drug of choice in the treatment of sulfonamide agranulocytosis is penicillin. Dameshek,[4] and Russek, et al.[9] have reported successful results. This antibiotic substance not only has a bacteriostatic action but also does not depress the bone marrow. In addition to the control of the sepsis it is advisable to use other supportive measures. Whole blood transfusions, if used within twenty-four hours after being drawn, still contain the desired platelets and white blood cells and should be used if available. Folic acid,[3] a liver concentrate in purified crystalline form, has been shown to increase the total leukocytes and also the percentage of granulocytes. If the infection present is caused by an organism not sensitive to penicillin, other antibiotics such as streptomycin may be used. Cameron[2] reports a fatal case in which penicillin controlled the staphylococcus infection but not the pyocyaneous septicemia.

There have been many cases of sulfonamide agranulocytosis, few of which have been reported. Of those reported, the majority of patients with mild attacks have survived; however, in most of the "full blown" cases death has resulted.

Purpura hemorrhagica is a possible serious, though infrequent, complication of sulfonamide drug therapy. Gorham et al.[5] in reviewing eight cases found a mortality of 50 per cent. In three of the four fatal cases the drug was continued after the purpura had occurred. In the four cases in which recovery resulted, the drug was discontinued at the first sign of hemorrhagic manifestations. The total amount of drug administered varied from 5.5 gm. to 48 gm. This indicates a difference in individual susceptibility. Kracke[6] has shown by daily blood counts on patients receiving sulfonamide therapy that there is a depression of the platelets on the first day of treatment and a decided increase in platelets on the first day after treatment is discontinued. Thrombocytopenia precedes the purpura. Therefore, if a marked reduction in the platelets is found, the drug should be discontinued immediately. In practice, platelet counts being rather impractical, one can obtain an accurate estimation of the platelets by examining the differential

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From the Ancker Hospital, Saint Paul, Minnesota.

TABLE I. BLOOD EXAMINATION RECORD

Date	Hemoglobin in Grams	Red Blood Cells in Millions	White Blood Cells	Differential					Sed. Rate	Platelets	Transfusion
				P	L	M	E	B			
8- 2-46	7.0	1.8 M.	2,700	49	51				91 mm./hr.		500 c.c. W. B.
8- 3-46	12.4	3.14 M.	850	35	63	1	1			10,000	3,000 c.c. W. B.
8- 4-46	11.8	2.95 M.	2,050								1,000 c.c. W. B. 500 c.c. Plasma
8- 5-46	8.5	2.62 M.	850	69	29	2				12,000	1,500 c.c. W. B.
8- 6-46	10.2	4.38 M.	2,150	51	31	13	5				1,000 c.c. W. B.
8- 7-46	12.2	3.9 M.	3,250	77	23						
8- 8-46	12.2	3.7 M.	6,450	86	10	4				14,000	
8- 9-46	12.0	3.71 M.	11,950	72	25	2	1			28,000	
8-10-46	12.4	4.26 M.	9,300	81	14	5				36,000	
8-12-46	12.2	4.98 M.	7,500	78	18	4			32 mm./hr.	121,000	
8-13-46	11.2	3.83 M.	9,300	65	26	9					
8-14-46	11.0	3.64 M.	6,400	51	43	6				140,000	
8-15-46	12.6	3.93 M.	7,000	56	35	9				184,000	
8-16-46	11.8	3.76 M.	6,200	67	25	8				148,000	
8-17-46	12.8	4.28 M.	6,500	63	33	4				162,000	
8-21-46	11.4		6,100	49	49	2					
8-28-46	10.2		5,450	36	48	13	3			134,000	
8-30-46	13.2	4.0 M.	8,350	50	45	5				100,000	
9- 6-46			9,300	29	67	4				140,000	
9-20-46	13.0		6,100	30	65	5					
9-28-46	13.0	4.85 M.	6,550	[illegible]					25 mm./hr.		
11-25-46	12.7		5,650	50	43	4	1	2			

smear. With a marked thrombocytopenia the platelets will usually disappear from the smear.

Case History

On August 1, 1946, Mrs. A. K., a forty-three-year-old white woman, entered Ancker Hospital with the chief complaints of hemoptysis, occurring five days previously, and weakness of five months' duration. She was eight months pregnant, the last menstrual period having been on December 3, 1945. She was a para seven, gravida seven. The history indicated that in June, 1946, the patient had developed frequency and burning on urination and she had been given 1 gm. of sulfadiazine three times a day for a period of two days. For the past five months the patient had complained of severe weakness, swelling of the ankles, and fainting spells. For the past month there had been a daily elevation of temperature to 100° orally. To treat an anemia, her private physician had given her iron, calcium and vitamins. One week previous to admission the patient had again been given 1 gm. of sulfadiazine three times a day for a period of six days. Because of the hemoptysis the patient was referred to Ancker Hospital to rule out tuberculosis.

Physical examination on admission revealed a well-developed and apparently well-nourished white woman. The skin and mucous membrane showed marked pallor. The pulse was 128 per minute and the blood pressure was 110 systolic and 82 diastolic. The uterus was enlarged corresponding to an eight months' pregnancy.

Laboratory examination disclosed a hemoglobin of 7 gm., a red blood count of 1,800,000, a white blood count of 2,700, a differential of 51 per cent lymphocytes and 49 per cent polymorphonuclear cells. Few platelets were found on the smears. The x-ray revealed an essentially normal chest.

On the second hospital day, the patient developed a severe diarrhea, having large malodorous, watery, grossly bloody stools. There was marked retching and vomiting. She developed large areas of ecchymosis over the entire body. Her temperature became elevated to 103° and the blood pressure fell to 98 systolic, 60 diastolic. She was given whole blood transfusions and penicillin, 50,000 units every three hours intramuscularly. On the third hospital day, the patient, having become dyspneic and cyanotic, was placed in an oxygen tent. At this time her white count had fallen to 850, and her platelet count was 10,000 (Table I). Many new areas of ecchymosis were found in the mucous membranes as well as in the skin.

Because of the viable fetus and the critical condition of the patient, permission was granted and preparations made for postmortem section if the patient should expire undelivered. On August 4, 1946, at 12:45 A.M., after a total labor of two hours and five minutes, the patient was delivered of a 6-pound 6-ounce living baby girl. The delivery was carried out with the patient in bed, under an oxygen tent and with aseptic technique. A first degree mucosal laceration was sustained, but because of the severe bleeding, sutures were required. Twenty hours post partum, the patient developed severe intra-uterine bleeding, resulting in shock. Intra-uterine packing and oxytocic drugs were used to control the hemorrhage. The pack was removed forty hours later.

On August 6 the patient developed acute urinary retention requiring repeated catheterizations over a period of six days.

On August 8 the patient had an elevation of temperature to 105° orally and developed pneumonia. The x-ray disclosed a patchy infiltration of the mid-portion of the base of the left lung. The purpuric lesions in the skin increased in number and the patient developed jaundice. Penicillin was increased from 50,000 to 100,000 units every three hours. Sixteen days later, x-ray of the chest showed complete resolution of the infiltration.

On August 11 the patient was removed from the oxygen tent. At this time she developed a fecal impaction, following the removal of which she developed an elevation of temperature to 104°.

On August 18 the patient was much improved clinically, so penicillin was discontinued. However, on August 23 the patient developed severe chills and had an elevation of temperature to 103.8°. She had swelling and tenderness in the left breast. A diagnosis of acute mastitis was made, and the patient was started on penicillin, 40,000 units every three hours.

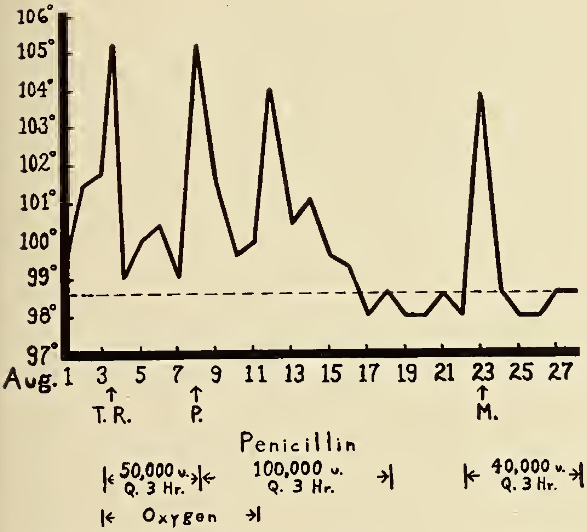

Fig. 1. Temperature chart. T.R. indicates transfusion reaction, P indicates pneumonia, and M, mastitis.

On August 28 the patient was considered fully recovered and was discharged to be followed in the outpatient clinics of Ancker Hospital. Follow-up blood examinations were satisfactory (Table I).

During the twenty-eight days of hospitalization, the patient was given 11,900,000 units of penicillin, fourteen transfusions of whole blood (500 c.c. each), and one transfusion of plasma (500 c.c.), seventeen 5 mg. tablets of folic acid (total amount available), and was in an oxygen tent for eight days (Fig. 1). To obtain the greatest benefit from leukocytes and platelets in the transfused blood, only fresh blood was used, several units being less than two hours old when given. The patient was given parenteral feedings, thiamine chloride 100 mg. daily, ascorbic acid 200 mg. daily, hykinone 1 c.c. (4.8 mg.) daily, and other supportive measures.

Summary and Conclusions

A case of granulocytopenia and thrombocytopenia following sulfadiazine therapy has been reported. To our knowledge this is the fourth case reported of thrombocytopenia due to sulfadiazine. The sensitizing dose was 6 gm. The clinical course was characterized by purpura, hemoptysis, melena, and depression of all the formed blood elements. Following parturition, the patient developed severe uterine hemorrhage, pneumonia and mastitis. The patient survived with massive doses of penicillin, multiple transfusions, oxygen, folic acid and other supportive measures.

Because of the seriousness of the complications, although infrequent, sulfonamide therapy should have careful hematological control.

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NAVAL RESERVE

During the months of May and June, a nationwide effort is being made to interest former navy men in joining the naval reserve.

The arguments for the desirability of a large naval reserve, for its effect in preventing future attack by a foreign war-monger and to provide a substantial base upon which to build in case of war, are incontestable.

The educational opportunities which can be utilized by members of the naval reserve cover a wide field. This enables those in a great variety of vocations to better themselves. Periodic two-week training cruises in ships of the reserve fleet afford a desirable way to obtain concentrated instruction. Members of the naval air reserve can retain and improve their flying or mechanical skills at one of the two dozen naval air stations now designated as reserve training centers. These centers, also provide training in radar, sonar, radio, and electronics.

Time spent in the reserve results in a 5 per cent increase in base pay for every three years of membership. Veterans of the army or navy between the ages of seventeen and thirty-nine, as well as non-veterans, are eligible.

VETERINARY MEDICINE

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DISEASE is one of the great tragedies of living things. It is one expression of a struggle which is carried on among different forms of life. Incessantly the conflict goes on without quarter or armistice. Infectious disease is merely a disagreeable instance of a widely prevalent tendency of all living creatures to avoid the necessity of building by their own efforts the materials which they require to survive. Whenever they find it possible to take advantage of the constructive labors of others, they follow that course. Plants, partly nourished by decaying animal remains, synthesize new structures by means of their roots and green leaves. Animals eat the plants, man eats both and bacteria attack all. Without bacteria to maintain the cycles of carbon and nitrogen exchange between plants and animals, all life probably would cease eventually. Plants would have no nitrates and no carbon dioxide with which to maintain their perennial synthesis. Cows and pigs would have no clover, man would have no meat and potatoes, rice and tea, beans and fish or whatever his diet, as governed by geography, may be.

Life is, in a sense, an endless chain of parasitism. That form of parasitism which we call "infection" is as old as animal and vegetable life. Swords and lances, high explosives, and all the modern engines of war have had less effect on the fates of nations than plague, typhus fever, cholera, yellow fever, malaria, typhoid fever, tuberculosis, smallpox, diphtheria and pneumonia. Nations have crumbled under their onslaught.

The partial emergence of mankind from the direful effects of these conditions has been due to the advancement of science. The tremendous technical advances made in the science of medicine have modified greatly the nature of its practice, as well as all of its social and economic relationships. The practice of medicine, once limited almost entirely to the physician, now enjoys the participation of many other professions which are concerned with vital aspects of the medical problem. In many ways the veterinarian must be a scientist far beyond the heights that must be reached by the physician.

Many of the bacterial diseases of animals may cause serious illness in human beings, and animals are susceptible to almost as many diseases as are human beings. Economic problems are not the only factors which demand that diseases of animals be controlled and eradicated whenever possible. There is no doubt that the economic loss to the livestock industry caused by preventable disease has been significant, but this problem cannot be considered to be as vital to man as the effect of those diseases which are communicable to him. Basically, the professional activities of veterinarians and physicians are the same. Both are concerned with the diagnosis and treatment of disease and its control and prevention. Probably the most important functions of your profession are the care of sick and injured animals, the protection of that livestock industry on which the life of our nation greatly depends and the protection of human beings against those diseases which are peculiar to animals but which are communicable to man. Probably in the last instance we shall find the greatest opportunity for co-operation between the veterinary and the medical professions. It would be superfluous for me to discuss before this organization those conditions which are common to animals and which are communicable to man. In fact, it would transcend my capabilities. But I venture to say that many would manifest no little surprise should a complete list of these diseases be recited. One can scarcely believe that glanders, encephalitis, Malta fever, anthrax, tuberculosis, milk sickness, some parasitic diseases, swine erysipelas, psittacosis, cowpox, foot and mouth disease, plague, tularemia, rat-bite fever, infectious jaundice, Rocky Mountain spotted fever and rabies—yes, all of these and probably many other diseases—fall into this category. In humans some diseases, such as rabies, occur very rarely in this age, because of scientific discovery and attainment. But when it strikes, what is more ghastly than rabies? A cursory review of a list such as has been given will dispel at once any thought that the activities of the veterinary physician are chiefly concerned with economic

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Response of the president of the Minnesota State Medical Association at the fiftieth anniversary banquet of the Minnesota Veterinary Medical Association, Saint Paul, Minnesota, January 7, 1947.

problems. His signal achievement in eradicating tuberculosis of cattle; his accomplishments in dealing with infectious equine encephalomyelitis; the service which he has rendered in practically eliminating glanders as a threat to the health of human beings; the fact that he has prevented undulant fever from becoming a major health problem by his supervision of the milk and meat supply; the fact that his co-operation with the medical profession and the splendid achievement of his specialists in the fields of pathology and bacteriology have made it possible to control many diseases of a parasitic nature; all of these accomplishments and many more reveal the heights which the practice of your profession has attained.

We are living in an age of research. There is no doubt that the progress of our entire civilization is based on the power of the human intellect. When the spark of genius appears in an individual, it should be given the greatest opportunity for development, so that its benefits may be extended. A new opinion may originate with a single individual, but the result which such an opinion may produce will depend on the opportunity which it is given for development and its effect on the minds of those who are ready for its reception.

In veterinary medicine, materials have been collected which present a rich and an imposing appearance, but unless and until these materials can be brought to those who are interested in becoming members of your profession, your greatest ambitions cannot be attained. No doubt many men and women of your profession who are desirous of establishing themselves satisfactorily in their work have been diverted from their purpose by lack of opportunity for educational advancement. It is certain that many have failed to adopt this profession as their life work because of lack of educational facilities. Many have had to be contented with inferior training. Many of these last, nevertheless, have succeeded by dint of ceaseless labor in establishing themselves on a plane above reproach. Never in the history of your organization has there been a greater need or justification for educational expansion.

I know that your present requirements for a degree in veterinary medicine are two years of preveterinary training in a recognized university or college and four years in a veterinary college. I know that since the war there has been a striking increase in the number of both men and women who wish to study veterinary medicine. I know that at Kansas State College one out of every seven individuals who registered wished to study veterinary medicine, but because of lack of facilities in the various colleges, the number of students enrolled in veterinary medicine still shows little increase over that recorded before the war. I know that in 1945 there were ten veterinary colleges in the United States and two in Canada. Also, I know that since then, Illinois Missouri and California have established schools of veterinary medicine, but all this is insufficient. It appears that we may view with optimism the prospect of such an expansion in our own great state university. A similar development is clearly the responsibility of many institutions whose function is the advancement of the teaching of medical science. It ill behooves them to linger in the cloudy obscurity of ancient ideas and practices. Science and industry recognize the important role of highly trained, ethical and independent members of the veterinary profession, and your colleagues in the medical profession are proud of your achievements.

INFECTIOUS AND SERUM JAUNDICE

(Continued from Page 502)

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CLINICAL-PATHOLOGICAL CONFERENCE

COR PULMONALE

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Dr. A. M. McCarthy: This case (A-46-2348) is that of a twenty-nine-year-old male who had been admitted to the Minneapolis General Hospital on several occasions.

In 1927, at the age of nine years, he had an attack of diphtheria while in Wisconsin, and little is known about the details of the illness. During the attack of diphtheria, he developed gangrene of his right leg. The leg was amputated. A persistent cough followed the illness. In 1928, he was seen elsewhere because of his chronic cough. X-rays at this time showed a parenchymal infiltration and fibrosis in the right upper lung that was thought to be tuberculosis. In 1929 he was treated for tuberculosis elsewhere. Acid-fast bacilli were never demonstrated. Artificial pneumothorax of the right side was maintained for several months and repeated at various times up to 1938.

He was first admitted to the Minneapolis General Hospital in 1938 complaining of a chronic cough. His sputum was negative for acid-fast organisms. Blood pressure was 100/60. Hemoglobin was 85 per cent (Sahli); leukocyte count was 16,500. Serology was negative. Urinalysis showed albumin that varied from a trace to four plus. The clinical impression was pneumonia of the left lower lobe. He responded well to sulfanilamide.

He was next admitted in July, 1940. At this time, he was suffering from a low grade fever and raising approximately 2 ounces daily of thick green purulent sputum. All sputum examinations were negative for acid-fast bacilli. Lipiodal studies showed a saccular type of bronchiectasis of the left lower lobe. Urinalysis showed a trace to four plus albumin with occasional casts and red blood cells. During this admission, he developed a spiking fever of 104° with chills. A friction rub was heard in the left chest. Type 9 pneumococci were found in his sputum. He responded well to sulfanilamide.

He was readmitted in March, 1942, because of chills and fever, weight loss and increased productivity of his cough. Clubbing of the finger tips of both hands was noted. There was dullness over the entire right chest. The left chest was hyperresonant. Crackling erepitant râles could be heard in both lung fields. Heart tones were the loudest to the right of the sternum. His temperature varied from 98° to 102°. Sputums and gastric lavages for tuberculosis on guinea pig inoculations were negative. X-rays showed cystic bronchiectasis with atelectasis of the right lung, and emphysema of the left lung with cystic bronchiectasis of the base of the left lung. The heart and mediastinal structures showed a shifting to the right side of the thorax.

He was readmitted from time to time to the hospital during the next few years complaining of a cough, chills, and fever. Each time he responded well to chemotherapy and expectorants. Each time his urine showed from one to four plus albumin with numerous red blood cells and a few leukocytes per high power field. In June, 1942, his blood pressure was 112/68. A phenolsulphonthalein test showed a total urinary excretion of 49 per cent dye in two hours. A congo red test for amyloidosis showed 62 per cent retention of dye in the blood in one hour. Concentration tests showed a specific gravity of urine that varied from 1.006 to 1.020. Electrocardiograms showed a sinus tachycardia.

His next admission was almost three years later in March, 1945. His temperature varied between 100° and 103°. He expectorated two to three cups of sputum daily. Venous pressure varied from 17 cm. citrate to 21 cm. citrate. Liver dullness was noticed 3 cm. below the right costal margin. A congo red test showed 60 per cent dye retention in one hour. During this hospital stay, he developed dyspnea, ascites, and edema of his ankle. He was digitalized. Plasma proteins were 4.58 gm. of albumin and 1.93 gm. of globulin. Sedimentation rate was 67 mm. in one hour. Sputums were negative for acid-fast bacilli. An electrocardiogram showed right axis deviation.

He was again seen in June, 1945, because of recurrence and increase in dyspnea, ascites and edema of his ankle. Blood pressure was 94/60. He was markedly orthopneic and quite cyanotic. The right border of the heart was 10 cm. to the right of the midline. A loud blowing systolic murmur was heard best on the right side of the chest over the second and third interspaces in the right midclavicular line. His abdomen was distended with fluid present. The liver edge was not palpable. There was a two plus edema of his remaining leg. Venous pressure was 17.5 cm. citrate. Congo red test showed 68 per cent dye retention in one hour. Hemoglobin was 109 per cent (Sahli). He was still expectorating large quantities of sputum. He improved with diuretics, digitalis, and penicillin therapy.

He was readmitted in June, 1946, because of increasing dyspnea, orthopnea, and edema. The liver edge was down to the umbilicus. The neck veins were pulsating. There was questionable liver pulsation.

From the Department of Pathology, Minneapolis General Hospital, A. J. Hertzog, M.D., Pathologist.

Peripheral edema was four plus. Clubbing of the fingers was noted. Venous pressure was 23 cm. of citrate. Circulation time was 18 seconds with calcium gluconate. Blood urea nitrogen was 34 to 44 mg. per cent. Abdominal parententesis removed 1,000 c.c. of fluid. His last admission was in November, 1946. Blood pressure was 140/90. Pulse was 120. He was markedly cyanotic and orthopneic. The findings were similar to the last admission. Two thousand cubic centimeters of fluid were removed from his abdomen. He became cyanotic and expired on November 25, 1946.

Dr. Herman Kosnitscky: This man was living on one lung, as his right lung had been completely collapsed by the inflammatory process and repeated pneumothorax for many years. The left lung was emphysematous. Both lungs with lipiodol studies on x-ray showed a sacular type of bronchiectasis. The question of amyloid disease arose but the laboratory findings by the congo red test were not confirmatory. Towards the latter part of his illness, he began to show signs of congestive right heart failure. This man lived unusually long with right heart failure. Once right heart failure occurs in chronic pulmonary conditions, patients usually die shortly. The earlier diagnosis of tuberculosis of his right lung was never established by finding acid-fast organisms.

Intern: What is the mechanism of right heart failure in this case?

Dr. Hertzog: Pulmonary emphysema is present in practically all of these chronic chest conditions and, by interfering with the capillary circulation of the lungs, becomes the most important factor in the pathogenesis of cor pulmonale. In emphysema increased intra-alveolar pressure can be demonstrated. This increased pressure occurs at the expense of the collapsible capillaries and small blood vessels within the interalveolar septa. The peribronchial fibrosis associated with the bronchiectasis and the atelectatic right lung could be contributing factors.

Student: What was the clinical diagnosis in this case?

Dr. McCarthy: Chronic bronchiectasis with pulmonary emphysema; chronic cor pulmonale with congestive right heart failure; and amyloid disease of the kidneys.

Dr. Hertzog: If there is no further discussion, Dr. McCarthy will give the autopsy findings.

Autopsy

Dr. McCarthy: The body was that of a young white male measuring 166 cm. and estimated to weigh 120 pounds. There was marked cyanosis particularly of the face, fingers, and toes. There was an old amputation of the right leg in the midportion of the thigh. There was grade 4 edema of the entire left lower extremity. The toes and fingers showed marked clubbing. There was present approximately 2,000 c.c. of straw colored fluid within the peritoneal cavity. The liver margin was down 10 cm. below the right costal margin. Both pleural cavities were obliterated by old fibrous adhesions. The right lung was completely collapsed. The left lung was large and voluminous. The pericardial sac contained 800 c.c. of fluid. The heart weighed 490 gm. with practically the entire heart composed of a markedly dilated and hypertrophied right ventricle with a marked dilation of the pulmonary conus.

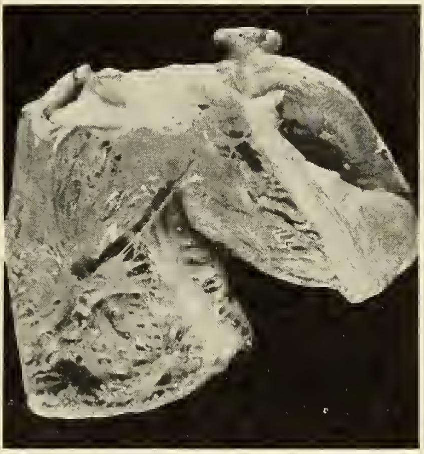

Fig. 1. Heart shows marked hypertrophy and dilatation of right ventricle.

The righ ventricular wall measured 0.7 cm. as compared to the left ventricular wall that measured 1.2 cm. The tricuspid valve showed a marked dilation and measured 14.5 cm. as compared to the mitral valve with a circumference of 10.5 cm. The pulmonary ring measured 8 cm. as compared to the circumference of the aortic valve which measured 7 cm. There was no evidence of any hypertrophy of the left ventricle. The coronary arteries showed a minimum of sclerosis and were patent (Fig. 1).

The right lung weighed 500 gm. and the left lung weighed 1,220 gm. The right lung was completely collapsed and covered with old dense fibrous adhesions. On section of this lung there was complete atelectasis present. Evidence of tuberculosis was not found. The right main pulmonary artery in its lower branch near the bifurcation was partially occluded by an old pale thrombus that was firmly adherent to the wall of the vessel. The larger branches of the pulmonary artery were dilated and contained numerous atheromatous plaques in their walls. The bronchi on the right side were greatly dilated and filled with thick purulent material. This dilation extended out to the periphery of the lung. The left lung was large and voluminous and covered by old adhesions. There were numerous large emphysematous blebs in the upper lobe. On section of the lung there was rather marked hemorrhagic edema present especially in the upper lobe. The main branches of the pulmonary artery were dilated and showed rather marked arteriosclerosis in the form of yellow atheromatous plaques in their walls. The main bronchi of this lung were dilated and filled with purulent mucoid material. This dilation of the bronchi extended out into the smaller bronchi to the periphery of the lung.

The spleen, liver, and kidneys showed gross evidence of passive congestion. The remaining organs showed nothing of note.

Dr. Hertzog: Microscopic examination showed no evidence of amyloid disease of the kidneys, liver, or spleen. Congo red stains were negative. The liver showed long-standing passive congestion. The right lung showed complete atelectasis with no evidence of any tuberculosis. The alveoli of the left lung were dilated with fragmentation of the septa as seen in emphysema. Although intimal atherosclerosis of the larger branches of the pulmonary arteries could be seen, there was a lack of any change within the walls of the smaller pulmonary arteries. This would indicate that most of the resistance responsible for the pulmonary hypertension apparently arose in the small septal vessels. The bronchioles were markedly dilated as seen in bronchiectasis associated with chronic bronchitis.

The anatomical diagnosis was then: (1) cor pulmonale with hypertrophy and dilatation of right ventricle; (2) chronic bronchitis and bronchiectasis; (3) left pulmonary emphysema; (4) right pulmonary atelectasis; (5) thrombosis of right pulmonary artery; (6) atherosclerosis of pulmonary arteries; (7) passive congestion of liver; (8) ascites; (9) left pulmonary edema and bronchopneumonia; and (10) old amputation of right leg.

Discussion

Dr. McCarthy: The term cor pulmonale is commonly used to describe right ventricular cardiac hypertrophy or dilation occurring independently of left ventricular hypertrophy as the result of increased resistance of the blood flow through the pulmonary circulation. Ayerza in 1901 deserves credit for calling our attention to this syndrome. He emphasized the marked cyanosis, calling them "black cardiacs." Ayerza and his pupils stressed syphilis of the pulmonary artery as the etiological factor. Today there is no reason for continuing the use of the term "Ayerza's Disease" other than of historical interest.

Cor pulmonale is commonly classified into acute and chronic types. Acute cor pulmonale is usually caused by massive pulmonary embolism. It is estimated that it is necessary to occlude at least 60 per cent of the total pulmonary vascular bed before heart failure occurs. Hence most nonfatal cases of pulmonary embolism do not cause sufficient obstruction of the pulmonary circulation to cause heart failure. Chronic cor pulmonale is more common and is due to a wider variety of causes. Spain and Handler[9] have recently given us an etiological classification based upon alterations in the thoracic cage, pulmonary vascular system, and pulmonary parenchyma. Clawson[3] in a study of 5,000 hearts in the records of the Pathology Department of the University of Minnesota collected a total of 118 cases of cor pulmonale up to 1946. The etiological factors in order of frequency were pulmonary tuberculosis, forty-five cases; bronchial asthma, twenty-two cases; bronchiectasis, sixteen cases; pulmonary embolism or thrombosis, nine cases; silicosis, seven cases; emphysema, six cases; pulmonary arteriosclerosis, six cases; chest deformity, six cases; pulmonary fibrosis, two cases; and pressure of syphilitic aortic aneurysm on the pulmonary artery, one case. All of these cases had congestive heart failure at the time of death.

George Higgins[6] at Glen Lake Sanatorium worked on the problem of hypertrophy of the right ventricle in pulmonary tuberculosis. He devised a technique where the ventricles were dissected apart and weighed separately. He took into account the general debility of the patient as a result of tuberculosis and with this debility the decrease in the size of the heart. He found a 40 per cent incidence of hypertrophy of the right ventricle associated with pulmonary tuberculosis. He was of the opinion that the pulmonary emphysema associated with the tuberculosis was the principal underlying factor responsible for the increased pulmonary vascular pressure.

In considering pulmonary arteriosclerosis as a cause of cor pulmonale, we are interested primarily in changes in the small arteries and arterioles, as sclerosis confined to the large arteries cannot cause pulmonary hypertension. Immediately one is faced with the problem whether pulmonary arteriosclerosis exists as a primary phenomenon or is secondary to increased pressure within the pulmonary circulation. The same problem exists in systemic hypertension. Brenner in 1935[1] described what he considered to be primary pulmonary arteriosclerosis. Brill and Krygier[2] in 1941 reported one case of their own and analyzed twenty cases from the literature of primary pulmonary vascular sclerosis. They were careful to exclude pulmonary emphysema, left heart failure, mitral lesions or congenital heart lesions which might have thrown strain on the pulmonary circulation. Cross and Kobayashi[4] recently reported a case of primary pulmonary vascular sclerosis in a twenty-month-old infant. Little is known about pulmonary hypertension and its relationship to pulmonary arteriosclerosis, the problem being very similar to that which exists in systemic hypertension. The recent work of catheterization of the right heart and pulmonary artery with direct measurements of the blood pressure within the pulmonary circulation will help throw some light upon the subject of pulmonary hypertension. Westermark has devised a simple technique of recording the pressure within the pulmonary circulation. By means of a manometer, the expiratory pressure necessary to collapse the pulmonary vessels on x-ray is directly proportional to the pressure within the pulmonary circuit, thus affording a means of early diagnosis of an existing pulmonary hypertension.

Deformity of the thorax as a cause of cor pulmonale is relatively rare. Hertzog and Manz[5] in 1945 collected 135 cases from the literature and added one of their own. The mechanism of the increased pulmonary resistance in these cases appears to be largely on the

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ARTHUS PHENOMENON INDUCED BY THE LOCAL APPLICATION OF PENICILLIN

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ARTHUS, in 1903,[1] noted that if horse serum were injected subcutaneously into rabbits every six days, resorption of serum would take place after the first three of such injections. However, after the fourth injection, infiltration appeared which finally developed into necroses, sequestration and abscess formation. This Arthus described as local anaphalaxis and his observation is universally referred to as the "Arthus phenomenon."

The phenomenon of Arthus has its counterpart in the human being. Such reactions have been reported in the literature since 1909, chiefly in association with the administration of antitoxins. Illustrative cases demonstrate that the Arthus phenomenon results invariably from repeated serum injections, particularly when local serum reactions from a previous inoculation are still present.

Gerlach, in 1923,[1] made a complete microscopic study of the Arthus phenomenon and concluded that the reactions were in no way specific and did not differ from any other inflammatory reaction except in degree. It is believed that the mechanism of the reaction is initiated by an antibody—antigen reaction resulting in arteriolar spasm. The endothelial damage due to the blocking of the vessels by leukocytic and red blood cell thrombi in turn leads to hemorrhage, necroses and slough.

Report of Case

Mrs. S. H. (U.H. No. 769636) was first admitted to the University Hospitals on August 15, 1946, with a history of having noted a painless tumor in the left breast three months prior to admission and a tumor mass in the left axilla three weeks prior to admission. Physical examination revealed an irregular, indurated tumor deep in the inferior portion of the left breast, 10 by 8 by 6 cm. in size and in the anterior part of the left axilla, a hard, matted cluster of nodes, 5 by 3 by 3 cm. Neither tumor was fixed to the skin or underlying structures. The remainder of the physical examination was negative. Blood and urine determinations were within normal limits. X-ray of the chest showed ectasia and calcification of the aorta.

A clinical diagnosis of carcinoma of the breast with axillary metastasis was made and, August 16, 1946, a radical mastectomy was performed under cyclopropane anesthesia. Pathological examination of the 2800 gm. specimen revealed a scirrhous carcinoma of the breast with multiple metastasis to the axillary nodes. Postoperatively the patient received 20,000 units of penicillin sodium intramuscularly every three hours on a prophylactic basis for the duration of her hospital stay; a total of 1,120,000 units were given over a seven-day period. Her course was uneventful and she was discharged from the hospital on August 23, 1946 (Fig. 1).

The wound was dressed on the patient's first clinic visit, August 26, her tenth postoperative day. At this time the skin surrounding the incision in the middle third of the wound over a distance of 6.5 cm. appeared dark; this portion of the wound had been closed under some tension at the time of surgery, though the remaining length of the incision had been approximated with ease. On this date, the patient was started on penicillin in wax and oil, 300,000 units of which were taken in daily intramuscular injections until August 29. At this time, the wound edges of the middle third of the wound were beginning to separate, and it was evident that a slough would occur in this region. The patient was readmitted for debridement and early grafting of the resultant defect.

On admission the involved area of the wound, measuring 5 by 7 cm., was debrided and a wet dressing of 0.5 per cent acetic acid in sterile saline, containing 250 units of penicillin per c.c., applied; in addition the patient was given 50,000 units of penicillin intramuscularly every three hours. The debrided area showed slight infection though the rest of the wound appeared healing and healthy.

On September 3, the patient developed a generalized urticaria, and the edges of the open part of the wound appeared red and angry; there was no associated rise of temperature or pulse. Benadryl, 50 mg. every four hours, was given with some recession of the urticaria; however, the intense wound reaction, in the form of a nonpurulent, necrotizing, intense inflammatory process, spread rapidly to involve three-fourths of the wound. During this period, there was redness and increased heat at the site of the intramuscular injections of the penicillin, though no slough appeared here. On September 5, all penicillin therapy was discontinued and, within the next three days, the inflammatory and necrotizing process in the wound had completely subsided. By September 8, with debridement, the wound presented as a clean, granulating surface.

Comment

Rostenberg and Welch,[2] in studying the types of hypersensitivity induced following the intradermal injections of penicillin in human subjects, noted that in originally nonsensitive individuals who became hypersensitive following repeated injections, the reactions, although eventually developing into a tuberculin type of hypersensitivity, may show transient characteristics simulating the type of reaction seen in the Arthus phenomenon. They postulate that penicillin sodium, injected intradermally, remains in situ for a sufficient time to combine with body proteins, thus forming a heterologous antigen in which the penicillin molecule acts as a hapten. When subcutaneous injections of penicillin were made, no reactions were obtained, and they thought it possible that

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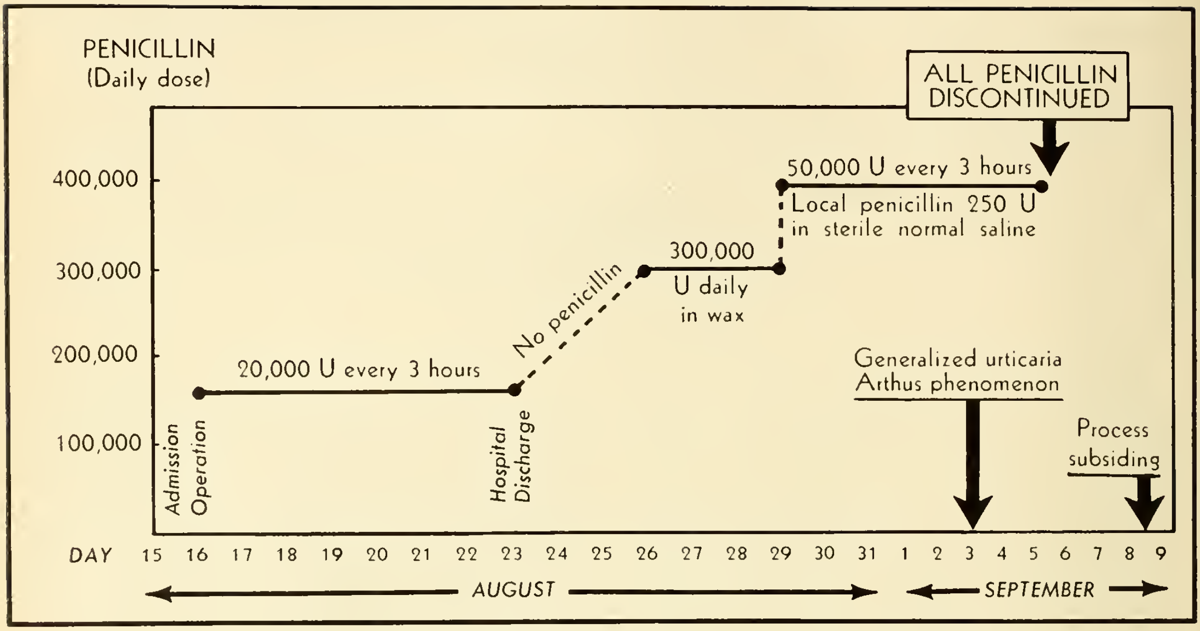

Fig. 1. Record of penicillin therapy in a patient who experienced an Arthus phenomenon.

rapid excretion did not permit sufficient time for the formation of an antigen.

The case presented is believed to represent an Arthus phenomenon induced by the local application of penicillin. It is possible that the penicillin in oil and wax, given five to eight days prior to the reaction was, by virtue of its slow absorption, the factor concerned in the formation of the antigen. It is also conceivable that the antigen was formed by the continued exposure of the wound to the penicillin solution. In either case, the formation of antigen, stimulating the production of antibodies, resulted in a hypersensitive state; the local application of antigen then initiated an antibody-antigen reaction of the type described as local anaphylaxis.

Conclusion

A case is presented in which the local use of a penicillin solution in an open wound in a patient hypersensitive to penicillin resulted in a rapid inflammatory and necrotizing process characteristic of the Arthus phenomenon.

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DANGER OF TRANSMITTING MALARIA BY TRANSFUSION

To the Editor:—I believe it would be desirable to renew a warning to medical practitioners that a danger exists in transfusing recipients from donors who have had a past malarial history.

Although I have no extensive data, the transfer of infection has occurred on numerous occasions all over the country. A case reported by Sharnoff, Geiger and Selzer *(Am. J. Clin. Path.* 15:494 [Nov.] 1945) was of particular interest because blood had been stored in a bank for eight days, yet a malarial infection was transferred. When blood is stored at low temperatures, the parasites seem to exist for a long period. The actual limits of time have not been established, but eight days would seem to be quite an interval for an active blood bank.

I have been told of a soldier who had been overseas under suppressive medication and never had had experience with malaria; yet, when his blood was used in this country many months later, a malarial infection occurred in the recipient. Such an occurrence is rather unusual now, although during the war it was seen quite frequently. Most of the men are now out of the malarious areas; hence that danger is minimized. In several thousand cases seen personally no less than a hundred men first had malaria in this country after withdrawal of the suppressive drug used overseas. One man had been off the drug thirteen months before his first attack occurred.

As a routine procedure I believe physicians should be advised never to use blood from any person who has had a past history of malaria. There is an instance in Denver where a Greek's blood was used and malaria resulted although the man had been away from Greece, where he acquired his original infection, for thirty-seven years.

All returning servicemen should be questioned closely about a postmalarial infection. One instance occurred here in which a man was asked specifically whether he had had malaria and he replied in the negative. However, his blood was infectious for the recipient and, on requestioning, he stated that he was afraid that the patient would be denied blood needed very badly and he thought it was of no importance.

It would seem that a safe time limit for a serviceman in this country after withdrawal from the endemic malaria areas and without a past history of malaria would be two years, provided he had not used suppressive drugs in the interim.

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NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from April issue)

Jacob Wright Magelssen, a son of Hans Gynther Magelssen, who was a Lutheran minister and "provst," and Drude Catherine Haar Daae Magelssen was born on August 11, 1843, at Aafjorden, a town about seventy miles north of Trondhjem, Norway. His parents were worthy representatives of two distinguished families.

The Magelssen family, dating back to 1350, was originally Hanoverian. In 1756 one of the Magelssen men, the grandfather of Jacob Wright Magelssen, immigrated to Norway and there established the family name which is well known and well represented in all the professions. The Daae family were of an illustrious line that traces back to the old nobility of Denmark. Catharine Haar Daae was born at Saltdalen, Norway, in the district where her father was the provost; her brothers, one of whom was Professor Ludvig Kristensen Daae, were brilliant and distinguished historians, economists and scientists. A provst, it may be said, is an official of the church whose responsibilities are comparable to those of a bishop in that he has supervision over other ministers in a large district.

Hans Gynther Magelssen was remarkable for vision, for ardent work on behalf of his church and his people, and for public spirit, especially in laboring for post roads and public schools, and these qualities descended to his children. To Mr. and Mrs. Magelssen were born nine children, six boys and three girls. Johan, the eldest son, was for many years editor of Oslo's famous *Aftenposten.* Kristian, one of the two sons who came to America, was a Lutheran minister at Highland Prairie, Minnesota, near Rushford. Kristen was a noted sculptor. Next came Jacob Wright, the subject of this sketch. Ludvig, the possessor of remarkable dramatic talent and beautiful singing voice, became, not an artist, as he might well have done, but a wholesale importer. Anton, the youngest son, had marked talent as a painter but, believing that one artist in the family was enough, he followed Jacob's example and became a physician. Of the three daughters, Elizabeth, the eldest, a beautiful and talented woman, was married to Peter Voss, head of a distinguished Latin school which bears his name; Valentine, the son of this marriage, became an eminent jurist. The second daughter, Gyda, ahead of her times, was one of the first women in Norway to go into business for herself, establishing a secretarial bureau. The youngest, Sofie, a linguist, newspaper correspondent and writer of books, was married to a Frenchman, P. Groth, and spent most of her adult life in Paris. Her husband and her daughter shared her literary interests and occupations. In 1940, because of the war, Madame Groth came to America, to take up residence in New York. In 1943 she was the only member living of the original family group, unless perhaps Ludvig survived.

When Jacob Wright Magelssen was small, he and the other children had a private tutor because the family lived far from a good school. Before he was four years old he learned to read and write and at the ripe age of eight he was sent with his brothers to a large Latin school for boys at Arendanl. Here he began the study of Latin and German; English was not taught in the school at that time. When, at thirteen, he began the study of English, his textbook was Macauley's *History of England.* After three years at the Latin school, the brothers again had a private tutor for two years. Next, Jacob was sent to Nissen's Latin school for boys, in Oslo, and then to the University of Oslo, from which he was graduated in 1861, at the age of eighteen, with the degree of bachelor of arts. In 1863 he passed the examination for the degree of doctor of philosophy.

Shortly after completion of his university work, Jacob Magelssen came to America, landing in New York during the famous week of July 13 to 16, 1863, when the Draft Riots of the Civil War were in progress in that city. Long afterward, in Rushford, Fillmore County, Minnesota, he learned that his colleague and close friend in the village, Dr. H. C. Grover, who served as an army surgeon in the Civil War, had been in New York City with his regiment, part of the troops that put down the riots. In coming to America Jacob Magelssen had hoped for admission to service in an army hospital in some capacity that would fit him to enter a medical school later, but finding this plan infeasible, he decided to spend the months before college opened in the fall in visiting the new Norwegian settlements in Wisconsin near Koshkonong and Stoughton. It was in this Wisconsin community that he met his future wife, Karen Elizabeth Newberg, who was a native of Norway.

In January, 1886, Dr. Magelssen, aged twenty-two and a half years, was graduated from Rush Medical College in Chicago; he had earned his way through by serving as assistant editor of a Norwegian paper, *Emigranten.* For the next few years after his graduation Dr. Magelssen practiced medicine in Koshkonong; the resident physician of the settlement, Dr. Hanson, wanting to return to Norway, persuaded the young graduate, who was urged by his local friends to accept the place, to take over the practice. For a time subsequently in this general period of his life, Dr. Magelssen was ship's physician on one of the boats of the newly established Norwegian-American line, and during this time his wife (he had been married in 1866 at the age of twenty-three) and children lived in Bergen with Mrs. Magelssen's father. When the shipping company had financial difficulty and the young physician was out of a job, he left his family in Norway and returned to Wisconsin, to the scene of his early medical practice. He was lonely, and impulsively on one fine day of that autumn of 1873 he hitched up his horses and started on the drive of five days to Minnesota to visit his brother, The Reverened Mr. Kristen Magelssen, of Highland Prairie, seven miles from Rushford. Winter set in early that year, Dr. Magelssen contracted inflammatory rheumatism, which affected his heart, and for months at his brother's home he was very ill. It happened that soon after his arrival in Highland Prairie, Dr. Karl O. Bendeke, of Rushford, who was planning to make a trip to Norway, heard of the visiting physician and drove over to ask him to serve in Rushford as locum tenens. By an unforeseen set of circumstances Dr. Bendeke moved permanently to Minneapolis instead of making his visit to Norway, and in the spring of 1874 Dr. Magelssen, pleased with Rushford and the beautiful surrounding country, settled in the village. His wife and children joined him in May. For three years the family lived in rented houses, and then Dr. Magelssen bought the house on the hill which was to be his home for the remainder of his long and useful life.

Under the Medical Practice Act of 1883 Dr. Magelssen received state certificate No. 530 (R). His impress on professional life, as on civic and cultural life in the community and county, was strong. He served his people well and co-operated with the State Board of Health in promoting general welfare. Excerpts from his memoirs concerning the early roads and particularly concerning the epidemic of diphtheria of 1881 and 1882 were quoted in the narrative which preceded the present series of biographical sketches of physicians of Fillmore County.

This man, like his father, was progressive, possessed vision and acumen, and was a tireless worker. Honest and fearless, loyal and dependable, of magnetic personality, a humanitarian and a natural leader, he was a vital factor in accomplishment of measures for the public good. He served a great many terms as mayor of Rushford and, keenly interested in education, was long the president of the school board. The schools of Rushford were among the first in the county to have courses in manual training, home economics and agriculture. Dr. Magelssen was a keen judge of men and, it is said, it was largely through his influence that the local schools were headed by outstanding superintendents, men who justified his opinion of them by going far in their professional field.

Dr. Magelssen's daughters, the Misses Thora and Gyda Magelssen, furnished most of the material on which this sketch is based. In the next few pages appear various verbatim excerpts from their contribution which give vivid highlights on the character and personality of the man:

> He was far ahead of his times in many ways. One of his pet projects was good roads. At every opportunity he preached and pleaded. Much of his argument fell on deaf ears because the people thought that he was considering only his own welfare. Sometimes they would say to him, "We would like you to talk on such an occasion, but don't talk about roads." When he said that every small town was dependent on the farmers 'round about, they laughed at him. . . . Another of his ideas which was ridiculed was that of a community hall.

Dr. Magelssen never lent his time and energies to politics although his abilities and his influence were recognized by many of the political leaders of the state who often tried to enlist him as a party worker. He always refused, saying that he wanted to feel perfectly free to change his opinions and to 'cuss' politicians when they needed it, and also that he could not guarantee not to lose his temper over some clever chicanery. His influence was felt, nevertheless. It was not an uncommon thing to hear a man say, "Well, if a smart man like the doctor is going to vote for so-and-so, that's what I'll do, too." On one occasion, when an important issue was before the town and the citizens were gathered in a mass meeting, discussion was dull and prolix, with much citation of law and precedent. Dr. Magelssen got up, big, forceful and genial: "Fellow citizens, you know what's for the best of this community. Never mind the law. Let's do this thing *right*." And the thing was settled in a few minutes.

In the sense that the term "hobby" means an engrossing and excluding interest in a particular occupation or subject, Dr. Magelssen had no hobbies, for he was interested in everything, although especially in all aspects of nature and particularly in weather, birds, and horses.

> He knew every bird so well that he could recognize many birds by their flight and even by the shadow of their flight cast upon the road ahead of him as he drove. As a part of his daily record he set down the date of arrival of each kind or bird in the spring. He always maintained that birds came north at certain dates, regardless of wind and weather. The robin, for instance, was due between the tenth and the fourteenth of March and arrived even when there was snow on the ground. . . . To the doctor a tree was one of God's most wonderful creations. He would cheerfully have imprisoned anyone who wantonly destroyed one. He often paid out his own hard-earned money to buy a load of wood for a poor man who wanted to chop down a lovely tree for firewood. And Heaven help the chopper who wasn't poor! . . . He was always trying to have a city park board, but there again he was ahead of his time.
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> In his memoirs more pages are devoted to horses than to anything else. He always owned more than he needed or could really afford. He would drive any kind of a horse, even one so crazy that it took two men to hold it while he climbed into the sulky. He would never knowingly sell one to an unkind master, and many times he bought a horse just to rescue it from a cruel owner. When he was the mayor, it was his rule that no team could be left tied outside more than a short time. After that, the police put the team into a livery stable, and the man had to pay the charges to get it out again. If the man put up a fight, the doctor would call round and settle it in person.
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> He had a brilliant mind, was an omniverous reader and had a wonderful memory, and all this made him an unusual conversationalist. He liked people and liked to talk with them. It mattered little whether the other fellow was an archbishop or an atheist, a banker or an Indian horse trader, the doctor could always contribute something and make the other do the same. . . . He loved poetry and drama. To read a poem was to remember it for life. . . . His courage was unfailing. Hard work and self-denial, responsibility and worry, sorrow and sacrifice were all in the day's work. . . . His compassion for the poor colored all his life. He could never bring himself to charge what his trips were really worth or to press for payment. "No," he would say, "I can't. There is too much sweat and blood on those dollars." . . . He was generous to a fault. His economies were practiced at his own expense, so that he might give to some one else.
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> No one is perfect, and the doctor had his faults. He had a hair-trigger temper, and very little patience, except with the sick. When he was really angry, he didn't care what he said or did. With his great size and strength he was not a man to meddle with when he was angry. But he never bore a grudge, and when he offended any one he was quick to make amends. . . .
>
> Nationality and creed meant nothing to him, not just because it is a doctor's business to serve all, but because he respected every man's right to his own faith and remembered the religion of his patients. Often, when he was going to a Catholic home, he would look up the priest and take him along.

In his memoirs, in writing in detail of the researches on leprosy of Armour-Hansen and of Boeck, both of Norway but of different schools of thought as to the origin and method of dissemination of the disease, he stated: "Some years later I had the honor of meeting Dr. Armour-Hansen, whose contention was the opposite of Dr. Boeck's. He presented just as many logical arguments, and plenty of proofs in support of his theory. This has always remained in my mind as an instance of the fact that no man's judgment is infallible and that every proposition is open to argument."

In 1897 the telephone first reached Rushford. The only instrument in town was installed in a small central office and the girl at central sent out a messenger for any one who was called. This limited arrangement led to comic incidents and not infrequently to occurrences of potential tragedy. During a winter storm when the wind was high and the roads drifting full of snow, Dr. Magelssen was obliged to tell one family in which a death was imminent that he probably would not be able to make his usual visit on the following day, but on the pleading of the family he promised to go, making the one condition that if in the meantime the patient, an old man, died, some one was to go to the Hart Exchange and telephone Rushford, to save Dr. Magelssen the trip. On the following day, one of the most terrible in the history of the community, the temperature 50 degrees below zero, the doctor waited until the time that had been specified and then set out. After hours of desperate struggle for himself and his horses he arrived, to find that the old man had died in the previous night and that one of the family duly had telephoned. The message never was delivered; it would be safe to say that the telephone girl did not soon forget Dr. Magelssen's comments when he returned to the village.

His friends were in many places, in all walks of life. Among them were Ibsen, who was also a relative; Bjornson, the novelist, who visited him in Rushford, as Rolvaag also often did; Prestgaard of the *Decorah Posten;* Bishop Lunde, Primate of Norway; Harold Stormoen, the actor; Skovaard, the violinist; Hugh Cooper, the engineer; Governor Nestos; Governor J. A. O. Preus (grandson of the C. K. Preus of Koshkonong); Senators Knut Nelson and Henrik Shipstead.

A friendship which all who knew the men like to remember was that of Dr. Magelssen, Dr. Henry C. Grover, and Dr. H. W. Eldred, the surgeon-dentist, all of Rushford, for each other. Dr. Magelssen was handsome, very tall, large and heavy, but not fat, with unusually broad shoulders and deep chest. He had a broad forehead, a large Roman nose, and heavy dark hair. He always wore a beard. His eyes, intensely blue, held a bright and delighted twinkle, as though the world were a comical and entertaining place, as it was to him. Dr. Eldred was a small wiry man, who also had very bright blue eyes. Dr. Grover was a tall, lean Hoosier, who had a friendly smile and spoke with a slow drawl. Dr. Eldred enjoyed the contrast in size between himself and Dr. Magelssen, who towered above him, and made a point of dancing around the handsome giant, sparring at him in pretended battle.

> When any one of these three men came out on the street, any one passing stopped to talk with him, sure of a lively conversation. When two of them came out at the same time, every one around them stopped to listen. When all three of them came out on the street together, a crowd would gather as promptly as for a circus, for it was certain that there would be a most entertaining scene within a few minutes. They were all very funny men, with keen sense of the comic, quick wits and even quicker tongues, and they kept the crowd roaring with laughter. At public gatherings they could hold up all proceedings if they decided to exchange a little lively repartee.
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> Dr. Grover had been in Rushford about five years when Dr. Magelssen came, and he was kindness itself to the newcomer. They made many hard, long trips together and helped each other in time of need. They spent long hours together in the office of one or the other, to their mutual profit and pleasure; and if there ever was any discord between them, it was never enough for it to have been mentioned at home. There are many instances cited in his memoirs by Dr. Magelssen and cherished by his children of the strong, sweet, lasting friendship among the three men.

In Rushford, in February, 1881, the death of Mrs. Magelssen occurred. Karen Elizabeth Newberg, mentioned earlier in this account, had been born in Bergen, Norway, on September 24, 1844, and she was married in 1866 to Dr. Magelssen. The seven children of the marriage were: Hans Gynther (1867-1902); Drude Catharine (1869-1871); Karen Henriette (Mrs. S. Rue, 1871——); Mathias Peter (1873-1920); Jacob A. O. (1876——), a rancher in Montana; another Drude Catharine (Mrs. Boyd of Minneapolis); and Kristian (1879——), like Jacob, a rancher in Montana.

Dr. Magelssen was married, a second time, to Thora Larsen, who was born on July 16, 1857, the daughter of Dr. Lauritz Larsen, founder and first president of Luther College, Decorah, Iowa. Mrs. Magelssen died in Rushford on July 3, 1908. To this marriage there were born five children: Karen Elizabeth (Mrs. N. M. Ylvisaker, of Minneapolis); Thora, a schoolteacher, of Rushford; Elsie (Mrs. Einar Jenson, of Newell, Iowa); Gyda, of Rushford; Agnes Margot (Mrs. M. C. Hoppin, in Anchorage, Alaska, in 1941).

Jacob Wright Magelssen died at his home in Rushford on January 9, 1931, from the infirmities of old age, in his eighty-eighth year. He had been a practicing physician, ethical, honored and loved, for sixty-five years, of which fifty-seven years were spent in Rushford, where he settled in 1874. Even after he retired from active practice and had given up his office, Dr. Magelssen continued, until a few months before his death, to see his old patients. Fifty-seven years is a long time, in which a physician may be the friend of many generations; and the knowledge in his community that father or grandfather knew "the doctor" when one or both were young, engenders confidence.

> His magnetism touched every one he met. When he came into a house of illness, so big and full of life, so jolly and yet so wise and capable and sympathetic, the whole atmosphere changed. The doctor radiated . . . the hope and strength and cheer of a vital person who loved life and loved his fellow men. "Why," he would say to some sick child, "when your father was as small as you, and was sick . . ." The little patient would smile and the family would relax.

About **Dr. Masse** of Chatfield, Timothy Halloran, a pioneer settler of the village stated in his *History of Chatfield* (1897) written from memory: "Among the practicing physicians of the early days were Dr. Allen . . . and Dr. Masse, who practiced here for a number of years." Other mention of Dr. Masse has not appeared. Dr. Nelson W. Allen was in Chatfield from 1854 until his death in 1876. It is possible that the name "Masse" was confused with that of Dr. D. N. Morse, in Chatfield as early as 1856, who will be mentioned further.

—Mecklenberg, of Wykoff, mentioned in the official directory of physicians licensed in Minnesota in the period from 1883 to 1890, inclusive, as a holder of an exemption certificate under the "Diploma Law" of 1883, was Dr. Frans Josef (Francis Joseph) Van Mackelenbergh, who came to America from Holland in 1866, to Fillmore County in 1872, and who practiced medicine in Fillmore County successively in Forestville, Spring Valley and Wykoff. His death occurred in Wykoff on March 18, 1892. An account of the life of Dr. Van Mackelenbergh follows in alphabetical place.

Roy A. O. Meidell, a graduate of the University of Christiania, Norway, in 1895, was licensed on January 12, 1897, to practice medicine in Minnesota, and on the following January 27 he filed his state certificate, No. 745, in Fillmore County. Further record in Minnesota has been lacking. On July 3, 1899, R. Meidell, aged thirty years, a graduate of the University of Christiania in 1896 [sic], was licensed to practice in North Dakota. He was a resident of Grank Forks County. In 1907 Dr. R. H. Meidell was in Aneta, Nelson County, North Dakota, the only Meidell in the directory of the American Medical Association. In 1912 Rolf Meidell was in Glendive, Montana, in 1914 in Havre; in 1916 he was in Aneta, North Dakota.

Simeon Paul Meredith was born on January 27, 1852, at Middleton, Wisconsin, the son of a farmer who was a native of Wales. After receiving his early education in the country school near his home, he enrolled as a student at the University of Iowa, in Iowa City, and subsequently for a time he taught the rural school near Middleton. In the next period of his life he qualified as a medical practitioner, and in the middle seventies began his professional career in Jefferson, Wisconsin, and later practiced in Spring Green.

It was probably in 1880 that Dr. Meredith enrolled at the Hahnemann Medical College and Hospital, in Chicago, from which he was graduated in 1882. Shortly after his graduation he came to Minnesota because of ill health, and it has been said that in 1882 he was practicing medicine in Austin, Mower County. In 1887 when, under the Affidavit Law of that year, he received a license to practice in the state, he was living in Plain Prairie. By 1888 he had brought his family to Spring Valley, Fillmore County, and there he remained in successful practice for nearly ten years. (An unverified statement has been noted that in 1897 he was in Owatonna, Steele County.) In February, 1899, he moved from Spring Valley to Pleasant Grove, Olmsted County, where he assumed the practice of the late Dr. Marshall T. Bascomb, who had died on January 28 of that year. A few weeks later, succeeding Dr. Bascomb, he was appointed county physician for the village and township of Pleasant Grove. According to notes from the *Minneapolis Homoeopathic Magazine,* in the spring of 1902 he settled in Grand Meadow, Mower County, near his former location, Spring Valley. By October, 1902, however, he had moved to Windom, Cottonwood County, in the southwestern part of the state, and there he lived for several years before moving to Garden City, southwest of Mankato, in Blue Earth County. From sparse record it would appear that he was in Garden City through 1907 and into 1908; in this period he retired from active medical practice, and in the spring of 1908 established his permanent home in Mankato.

Before leaving Wisconsin, Simeon P. Meredith was married to Fannie E. Glasier, of Bedford, Ohio, the sister of six brothers, most of whom were physicians or dentists. One brother, Gilson Glasier, for more than thirty years, in 1942, had been the librarian of the state law library of Wisconsin. Dr. and Mrs. Meredith were the parents of two children, a daughter and a son. Eva L. Meredith, a graduate of the Windom High School, and a musician, died in 1934. Harlan M. Meredith, who was born on August 22, 1889, at Spring Valley, in 1943 (since 1941) was an employe of the New York Central Railway, in Cleveland, Ohio. In 1942 there were living also Dr. Meredith's brother, George Meredith, in Omaha, and one sister, Mrs. J. F. Fargo, in Los Angeles, California.

Dr. Meredith died in Mankato on September 1, 1930, having suffered many years from bronchitis and asthma. Never in good health, he was not able to enter actively into civic life or to hold public office but applied his limited strength to the practice of his profession. He held respect and liking in the communities of his residence, in all of which he was a home-owning citizen, and left a record of able service to the sick.

Dr. Miller, of Waukokee, Carimona Township, Fillmore County, was mentioned in a county newspaper of January, 1887. The well-known Dr. Luke Miller, of Chatfield and Lanesboro, died in 1881.

(To be continued in June issue)

President's Letter

MEDICAL SERVICE AREA IS KEY TO PHYSICIAN DISTRIBUTION

THOSE of us who were present at the meeting of the officials of the county medical societies of the state on Saturday, March 1, 1947, in Saint Paul, were impressed by a talk which was given by Frank G. Dickinson, Ph.D., director of the Bureau of Medical Economic Research of the American Medical Association. In his discussion he proved that the old method of determining the physician-patient ratio provides an incorrect idea of the efficiency with which physicians are rendering medical service, and he showed further that the key to the question of the availability of medical care and the distribution of physicians may be found in the development of his new concept of medical service areas. Also, he demonstrated in a convincing manner that this method will show, far more accurately than previously used methods, the areas in which physicians practice as well as the availability of medical services.

According to Dr. Dickinson's scheme, the old method of determining the number of people per physician in counties, townships and other political areas is abandoned, and an entirely new concept, based on established marketing principles, is adopted. According to the old concept, it is customary to consider the population in relation to the number of physicians in a political area. One county may have one physician to 1,000 of population, and another county may have one physician to 2,000 of population. Such statistics may be accurate but what significance do they possess? Obviously, very little, because medical care is an economic service which bears no relationship to political boundary lines. Most physicians have patients who come from areas outside the county in which their offices are situated.

Recently, a map of the state of Minnesota has been circulated, in which each county is shaded according to the number of physicians there are per thousand of population. According to this map, white counties have one physician to 1,000 of population or less; black counties have one physician to 3,000 or more persons, and various other shadings are included between the two extremes. With this as an example, Dr. Dickinson brought out the significance of his theory most forcefully. He called attention to the fact that Hennepin and Ramsey counties appeared on the map in white, and Anoka County, which borders these two counties, appeared in black, indicating a ratio of one physician to 3,000 or more people in Anoka County. Obviously, it would be incorrect to assume that people living in Anoka County could not obtain adequate medical care because of the small number of physicians residing in that county. Actually, the people of Anoka County secure much of their medical care in Minneapolis and Saint Paul.

Physicians render service to people who reside in communities which are closely related to the retail trading area, very much as stores draw their customers from small or large areas. A small store may draw customers from an area which covers only a few blocks whereas a large department store may attract customers from a distance of many miles.

The Bureau of Medical Economic Research is attempting to designate medical service areas for the United States. Maps have been sent to all county medical societies. The secretaries of these societies have been asked to indicate on the maps the areas wherein medical care is provided by physicians who reside in primary medical centers within the counties. Not every county includes a primary medical center. A county which is lacking in this respect will be included in one or more of the medical service areas, the primary center or centers of which will lie outside the inadequately supplied county. Much overlapping will come to light. Secretaries in two well-supplied counties, separated by a rural county which does not have a medical center, may each claim that more than half of this rural county is served from a medical center of his county. The secretary of the state medical association will assist the secretaries of the county societies in allocating the disputed territory. At the state level also there will be overlapping, because people who live near the border of a state may look to a large city just across the border for some of their medical service. Elimination of these overlapping interstate areas will require conferences between the state secretaries. Eventually, the border of every medical service area should be drawn so that, in normal times, one or more physicians will reside within the area.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

SCHOOLS FOR PRACTICAL NURSES

THE dearth of nurses constitutes a complicated problem. With only 31,000 young women enrolled in nursing training schools in 1946, compared with 39,000 in 1938, and with 33,000 hospital beds unavailable because of the shortage of nurses, the seriousness of the present situation for the public and the hospitals is clearly indicated.[1] Among the reasons for the diminution of enrollment in training schools for nurses, probably the main one, is the opportunity for greater financial compensation in other vocations which do not require such a long period of training, and such a great expense, which recently, it might be noted, has been increasing. The many openings for trained nurses in activities outside the field of private nursing have made the scarcity even more acute.

In recent years the educational requirements for certification as a registered nurse have been on the increase. A few nursing schools, including the University Hospital, have instituted a five-year course. The report of the Committee of the American Surgical Association[2] undoubtedly represents the opinion of the medical profession at large on this trend in the nursing field. It is generally believed that a year of training in nursing will qualify a young woman of average intelligence to render valuable bedside nursing at home or in the hospital. The one-year graduate, of course, cannot take the place of the three-year trained nurse in the care of the seriously ill. The three-year course also is a requisite for further study and training for a Master of Nursing degree, qualifying for teaching and other responsible positions.

Through the co-operation of the nursing and medical professions of Minnesota, a bill providing for the certification of practical nurses after a year of training was recently passed by the state legislature, thus adding Minnesota to the list of twenty other states that have passed such a law.

The next step will be the establishing of training schools for practical nurses. The National League of Nursing Education and the American Nursing Association have declared themselves opposed to the establishment of training schools for practical nurses in conjunction with training schools for registered nurses. The shortage of nursing school instructors may well be one reason for such an attitude. On the other hand, there are a number of nurses' training schools in the state which have been forced to close because they could not meet the requirements established by the national organization of nurses. These schools might well be opened for the training of practical nurses. It should not be unreasonable to expect that the national nurses' organizations will aid rather than obstruct the steps proposed to train practical nurses. While some of the members of the State Board of Examiners of Nurses have shown a spirit of co-operation, others have followed the lead of the national organizations.

The training of practical nurses is of necessity a function of the nursing profession. The medical profession in the past has left the training of nurses to that profession. However, the public, the hospitals and the physicians are vitally concerned and are now entering the picture. To meet the situation a Minnesota Advisory Committee on Nursing has been formed, composed of representatives of the Minnesota State Medical Association, State Hospital Association, State Nursing Association, State Board of Health, State Board of Nursing Examiners, Farm Bureau Federation, State Institutions, State Department of Education, and Catholic Hospitals. This committee has sent out a questionnaire to hospital superintendents to obtain vital information in regard to facilities for training more nurses.

The co-operation of individual physicians, as well as the State Medical Association, in furthering the establishment of training schools for practical nurses, is assured.

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1. Editorial: The supply of nurses. J.A.M.A., 133:1156, (April 12) 1947.

2. Resolutions of the American Surgical Association on nursing problems. J.A.M.A., 133:1168, (April 12) 1947.

TRIMETHADIONE (TRIDIONE) IN PETIT MAL

THE reports of two fatalities resulting from the use of tridione for epilepsy constitute a warning to the profession, since this drug is now available on prescription. The previously reported toxic effects of the drug were few and apparently unimportant. The drug appears highly effective in the prevention of petit mal attacks in childhood, but not of grand mal attacks.

In one of the cases reported,[1] a sixteen-year-old girl had received tridione and dilantin each in doses of 0.1 gm. three times a day for six months. The second case[2] was that of a young woman of twenty-three who had been taking tridione over a period of ten months, usually 4 grains a day. She also had taken phenobarbital for the past nineteen years without ill effect. Both individuals developed severe anemia, granulocytopenia, and purpura, which failed to respond to treatment. At autopsy the bone marrow showed a marked reduction in hemopoietic tissue.

Apparently, tridione must be put in the same category as amidopyrine (to which it is similar in structural formula) in its effect on the bone marrow and on leukocyte production. While idiosyncrasy doubtless explains the effect of both drugs on the bone marrow, and is comparatively rare, yet the patient receiving tridione should have periodic red and white cell counts, and any toxic manifestations such as gastric irritation, nausea, skin eruptions or blurring of vision, should indicate the cessation of its use. It should not be used in the presence of any blood dyscrasia.[3]

1. Harrison, Francis F., et al.: J.A.M.A., 132:11, (Sept. 7) 1946.
2. Mackay, R. P., and Gottstein, W. K.: J.A.M.A., 132:11, (Sept. 7) 1946.
3. New and Nonofficial Remedies: J.A.M.A., 133:320, (Feb. 1) 1947.

DEMEROL

DEMEROL hydrochloride, a synthetic preparation, has been accepted by the Council on Pharmacy and Chemistry, according to the report which appeared in the *Journal of the American Medical Association* of September 21, 1946. The report indicated that the drug has a morphine-like analgesic effect which lies between that of codeine and morphine. While its action is in part due to depression of the parasympathetic endings, it is primarily the result of direct papavarin-like depression of the muscle fibers. Unlike morphine, demerol is not a potent hypnotic.

In an editorial which appeared in our March, 1946, issue, attention was called to the value of demerol in obstetrics. Dispensed in ampoule form with 50 mg. in each c.c., a dose of 100 mg. is given subcutaneously or intramuscularly at the onset of labor, and one or two additional doses are given as required. It is said that demerol does not prolong labor and does not produce a depression of respiration in the infant. Scopolamine is sometimes given with the first dose of demerol because of the former's amnesia effect, but this often makes the patient uncontrollable. The addition of a barbiturate adds a desirable sedative effect.

Demerol may be used to prevent the withdrawal effects in morphine addicts. It should be emphasized, however, that experience has shown that addiction to demerol is not uncommon. In accepting demerol, the Council has required manufacturers to mention the possibility of addiction, and will issue a report in the future on this phase of the use of demerol.

CARE

THERE is something big and fine about this philanthropic organization known as CARE (Cooperative for American Remittances to Europe, Inc.) which is composed of twenty-seven major American welfare agencies, and is operating on a nonprofit government-approved basis. Among the agencies concerned are the American Christian Committee for Refugees, American Friends Service Committee, American Jewish Joint Distribution Committee, Ukranian, Lithuanian, and Yugoslav Relief Committees.

Packages of food, weighing 21 pounds and containing meat, fats, sugar, milk, flour, chocolate, coffee and other essential foods, are already packed and shipped and awaiting orders to be sent to a designated needy person anywhere in Europe except Russia and the Russian zone of Germany (shame on you, Russia). Ten dollars sent to CARE, 50 Broad Street, New York 4, New York, will start a package on its way. Or for the same amount, a Blanket Package containing among other things two army surplus blankets, or a Woolen Package containing woolen cloth, cotton lining, thread, et cetera, can be similarly sent to an address in Europe.

THE STATE MEETING

The ninety-fourth annual meeting of the Minnesota State Medical Association will be held Monday, Tuesday and Wednesday, June 30, July 1 and 2, with headquarters at the Duluth Hotel, Duluth, Minnesota.

This meeting brings together medical men from five states and two provinces of Canada, men in all branches of medicine—general practitioners and specialists.

Duluth, at the head of the Great Lakes, with its refreshing climate, its superb recreational facilities, its central location and its accessibility, is situated in the heart of the Upper Midwest vacation land and is an ideal location for the 1947 convention.

The dates have been selected especially to provide busy Midwest physicians with an inviting opportunity to combine participation in one of the top medical meetings of the year with a vacation over the Fourth of July in Minnesota's scenic Arrowhead Country.

Out-of-State Speakers

Nationally prominent medical men from out-of-state will appear on the program, both for the general meeting and for the special sectional meetings being held by the Minnesota Academy of Ophthalmology and Otolaryngology, the Northwest Pediatric Society, the Minnesota Orthopedic Club, the American College of Chest Physicians, the Minnesota Radiological Society and the Minnesota Society of Clinical Pathologists.

Noted out-of-state speakers include:

Dr. Robert E. Gross, Children's Hospital, Boston, Massachusetts, specialist in heart surgery.

Dr. George E. Shambaugh, Jr., of Chicago, Illinois, Professor of Otolaryngology at Northwestern University.

Dr. M. L. Sussman of New York City, who will deliver the annual Russell D. Carman Lecture in Radiology.

Dr. Benedict Frank Massell of Boston, specialists in rheumatic fever.

Dr. John R. Neefe, a fellow of the National Research Council, Philadelphia. (Dr. Neefe was formerly with the University of Minnesota Medical School.)

Dr. Joseph Molner, Associate Professor of Preventive Medicine and Public Health, Wayne University, Detroit, Michigan, and Medical Consultant for the National Foundation for Infantile Paralysis.

Mrs. Charles W. Sewell, Administrative Director of the Women's Division of the American Farm Bureau Federation, Chicago, Illinois.

Dr. Haven Emerson, School of Public Health, Columbia University, New York.

Drs. Dean Smiley and Fred V. Hein, Consultants in Health and Physical Fitness of the American Medical Association, Chicago, Illinois.

Mr. Tom Collins, Publicity Director, City Mutual Bank and Trust Company, Kansas City, Missouri (Banquet Speaker).

Program Features

A new lectureship has been added this year, with the selection by the Minnesota Society of Clinical Pathologists of Dr. Elexious T. Bell of the Department of Pathology, University of Minnesota, to give the first annual A. H. Sanford Lecture, honoring the work of Dr. Sanford, a pioneer clinical pathologist of this country, who is also a member of the Minnesota State Medical Association.

The A. H. Sanford lectureship was established and dedicated to the Minnesota State Medical Association by the Minnesota Society of Clinical Pathologists. Dr. Bell will speak on the subject, "The Pathology of Diabetes Mellitus."

Another feature will be a booth, where demonstration of interesting gross pathological specimens by the members of the Minnesota Society of Clinical Pathologists will be conducted during morning and afternoon intermissions throughout the three-day session.

This year, as in years past, the last afternoon of the annual meeting will be devoted to a program discussing some important current problem. This meeting is thrown open to the public, and special invitations are sent to representatives of interested groups. This year's question for discussion is the problem of improving health in rural areas, the title chosen for the program being "Rural Health—A Joint Responsibility." In addition to MSMA members, invitations are going to hospital administrators and hospital boards, nurses and representatives of the AFL, CIO, the Farmers Union, the Railroad Brotherhood and the Minnesota Farm Bureau Federation. The program is planned so as to provide an exchange of ideas among farm people, hospital authorities and physicians and a chance for each group to present its views of the various phases of the problem and its proposed solutions.

The Scientific and Non-Scientific Committees of the Association will again hold their annual Committee Breakfasts, preparatory to making their reports to the House of Delegates.

Twenty Roundtable Luncheons—ten on Tuesday and ten on Wednesday, both at 12:15 p.m., will also be held again this year. Recent developments in scientific medicine will be discussed.

The following Special Sectional Meetings are scheduled for this year's program, each of them open to all convention visitors:

Monday, June 30
- 9 a.m.—Minnesota Academy of Ophthalmology and Otolaryngology.

Tuesday, July 1
- 9 a.m.—Minnesota Orthopedic Club.
- 2 p.m.—American College of Chest Physicians.

Wednesday, July 2
- 9 a.m.—A special meeting devoted to investigative work, with speakers presenting latest information on research developments.

Social Events

The Annual Golf Tournament this year will be held at the Northland Country Club on Sunday, June 29, at 1 p.m. Attractive prizes are provided and arrangements are being made by a committee of which Dr. R. L. Nelson, 324 W. Superior St. Duluth, is chairman.

As a special feature, members are invited to participate in a deep-sea fishing excursion along the North Shore of Lake Superior, where catches range up to 55 pounds. No fishing equipment or license is necessary; just appropriate fishing togs. Arrangements are being made through Dr. Karl E. Johnson, 2031 W. Superior Street, Duluth.

"Variety Night" will be held in the Ballroom of the Hotel Duluth at 7:30 p.m. Monday, June 30. Special music and entertainment with refreshments are planned. All convention visitors and wives are invited.

The Annual Banquet, at which the presentation of the Fifty Club certificates and pin and the presentation of the Southern Minnesota Medical Association Medal for the best individual scientific exhibit will be made, is scheduled for 7:00 p.m. Tuesday, July 1. The Presidential Address will be given by Dr. Louis A. Buie of Rochester. Guest speaker is Mr. Tom Collins, Publicity Director, City Mutual Bank and Trust Company, Kansas City, Missouri.

The American College of Chest Physicians will have a luncheon at 12:30 p.m., Tuesday, July 1, in the Tally-ho Room of the Holland Hotel. Reservations are being taken care of by Dr. G. A. Hedberg, Nopeming Sanatorium, Nopeming.

Alumni of Nu Sigma Nu, medical fraternity, will get together Monday evening at 5:30 for a social evening and dinner at the Duluth Athletic Club. This is the first reunion since the meeting before the war.

The Minnesota Academy of Ophthalmology and Otolaryngology is planning a 12:30 p.m. luncheon at The Flame on Monday, June 30. Reservations are being handled by Dr. Archie Olson, 815 Medical Arts Building, Duluth.

A Medical Women's Luncheon will be held at 12:15 p.m. at the Kitchi Gammi Club, reservations being made through Dr. Marie K. Bepko, Cloquet.

All physicians who served in World War II are invited to a luncheon meeting at 12:30 p.m., Monday, June 30, in the Tally-ho Room of the Holland Hotel, sponsored by the Society of Medical Veterans in Duluth. Purpose of the meeting is to give returned medical officers a chance to air their grievances with regard to the manner in which medical departments of the Army and Navy were administered during the war. All former medical officers are invited to come prepared to offer constructive criticism. Reservations are in charge of Dr. Karl E. Johnson, 2031 West Superior Street, Duluth.

A Minnesota Surgical Society luncheon will be held at 12:30 p.m., Tuesday, July 1, at The Flame. Make reservations through Dr. M. G. Gillespie, 205 West Second Street, Duluth.

Exhibits

One of the largest technical exhibits in the history of the Association will be on display in the Duluth Armory. These exhibits will be open for inspection each day beginning at 8 a.m. Arrangements have been made so that both the General Sessions and the Special Sectional Meetings will be recessed both in the morning and in the afternoon for 45-minute periods to permit convention visitors to view the exhibits, demonstrations and the scientific cinema.

There will be a series of five obstetric manikin demonstrations, arranged by the Committee on Maternal Health and sponsored by the Minnesota Department of Health. Three of these will be given in the Duluth Armory. The first at 1 p.m., Monday, June 30, by Dr. Willis E. Brown, Associate Professor of Obstetrics and Gynecology, University of Iowa Medical School, will be repeated at 5 p.m. the same day.

On Tuesday, July 1, Dr. Ralph E. Campbell, Associate Professor of Obstetrics and Gynecology of the University of Wisconsin Medical School, will give two demonstrations, one in the Arrowhead Room of the Hotel Duluth at 12:15 p.m., and the second at the Duluth Armory at 5 p.m.

On Wednesday, July 2, at 12:15 p.m., the final obstetric demonstration will be given by Dr. Mancel T. Mitchell, Clinical Assistant Professor of Obstetrics and Gynecology, University of Minnesota Medical School. This will be held in the Arrowhead Room of Hotel Duluth.

Radiological and Pathological Demonstrations will also be given. Among the scientific exhibitors this year are such organizations as the Minnesota Safety Council, the Minnesota Nurses Association, the Minnesota Public Health Association, the American College of Physicians and Surgeons, the Minnesota Department of Health, the Minnesota Society for the Prevention of Blindness, collaborating with the Department of Ophthalmology of the University of Minnesota, the Division of Vocational Rehabilitation of the State Department of Education, the American Medical Association, the Minnesota State Pharmaceutical Association, and the Minnesota Cancer Society. The Minnesota Society of Clinical Pathologists and the Minnesota Radiological Society are also sponsoring exhibits, as the State Committee on Tuberculosis.

Business Sessions

The usual business sessions will, of course, be held. The Council will have meetings on Saturday, June 28, and all during the convention. The House of Delegates will meet on Sunday, June 29, the day before the convention officially opens, and also on Monday, June 30, the first day of the convention.

Hotel Reservations

It is important that hotel reservations be made at once at the Association office, 496 Lowry Medical Arts Building, Saint Paul 2, Minnesota.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COUNTY OFFICERS HEAR PROGRESS REPORTS OF MSMA PROGRAMS

(Continued from previous issue)

Viewpoint of Farm Bureau

An able spokesman for the farm people, heard at the County Officers meeting held March 1, was Mr. J. S. Jones of Saint Paul, who is executive secretary of the Minnesota Farm Bureau Federation and one of the members of the Board of Regents of our State University.

His comments generally paralleled those of Dr. Larson, indicating that the medical profession and farm people see eye to eye on their common medical problems, but that in their solution, farm leaders feel there is much to be desired.

Speaking for the 60 thousand farm families who are members of this organization, Mr. Jones reported that prepayment medical service is uppermost in the discussions of rural people these days, and running a close second are demands for adequate hospital facilities and medical and nursing personnel.

Nurse Shortage Plagues Rural Communities

The unfilled gap left in the ranks of registered nurses by recruitment for military service and subsequent attractive opportunities elsewhere were lamented by Dr. W. H. Valentine of Tracy in drawing the attention of the county officers to the present plight of many rural hospitals. To relieve this critical situation, the training of girls for licensure as practical nurses was offered as a partial solution by both Dr. Valentine and Miss Thelma Dodds, R.N., president of the Minnesota Nurses' Association. Both speakers recognized the need for a concerted recruitment drive for all types of candidates for nurses training as the present flow of student nurses into classrooms is not keeping pace with the facilities that are available.

Dr. Valentine charged that the doctors had a bigger stake in a broad state nurse recruitment program than their efforts in that direction to date would indicate.

AMA Officials Describe Changing Medical Order

Leading off the discussion at the evening session, Dr. George F. Lull, secretary and general manager of the American Medical Association, dwelt at some length on the facilities which the AMA stands ready to offer the county medical societies to assist them in working out problems which the changing order in medical practice has produced.

The transition that is taking place, Dr. Lull said, is the result of "extrinsic things that are brought in from the outside, which has led to a changed concept of what medical service implies." As an illustration, he pointed to the United Mine Workers Health and Welfare fund, which could very well set a pattern for other industries.

Closer Liaison with County Medical Societies

An immediate objective of the AMA, Dr. Lull told the county officers, is to establish a closer liaison with the county medical societies to make them more aware of the activities carried on by the parent organization. As a means to that end, the Secretary's Letter was started recently to carry information to the county and state units about its deliberations and undertakings. In this connection, also, he announced that at the time of the centennial observance and annual meeting in Atlantic City in June, the AMA has scheduled a County Officers meeting for Sunday, June 8, to which all county officials who attend the national meeting are invited. It is planned at that meeting to have informal discussions on subjects that seem to be of greatest interest to the people who head up the grass roots of organized medicine.

Noting the importance of prepayment plans in the scheme of things medical, Dr. Lull described the services being offered by the recently created Division of Prepayment Plans within the Council on Medical Service, through which the seal of acceptance of the AMA is given to prepayment plans that qualify by coming up to certain standards. As a related, though independent, organization, he drew attention to Associated Medical Care Plans, Inc., working closely with the Council on Medical Service for the purpose of devising methods to establish some degree of reciprocity among the various prepayment plans in existence.

"It is when doctors step out of their role of scientists to become businessmen that controversy arises," Dr. Lull said. This is particularly true, he reflected, during this formative period when such a variety of prepayment plans are being launched.

The complete answer to the problem of providing prepayment medical service is not yet in sight, Dr. Lull told the doctors. It may well embrace several types of insurance engendering lively competition, which will keep the rates down, and will, in all probability, give the public a better service than if they were operated on a more monopolistic basis.

Public Relations Responsibility of Individual Doctor

The AMA has been accused of failure in its public relations, Dr. Lull said. It was his conviction, however, that the building up or breaking down of public relations for the medical profession is actually almost entirely in the hands of the individual doctor and his personal relationship with his patients—a relationship that determines whether the public is going to think ill or well of the profession as a whole. No amount of newspaper or other publicity, however striking, is likely to alter the judgment of the public, formed on the basis of personal experience with the family doctor, in Dr. Lull's opinion.

As an excellent health education medium, he urged the county societies to avail themselves of the transcribed health platters, which may be borrowed from the AMA headquarters for local station rebroadcasts. Many stations, Dr. Lull said, donate a certain amount of time for public interest programs and would be glad to make use of these transcriptions.

The county officers heard that eleven publications, including the *Journal AMA,* with a weekly circulation of over 130,000 are all a part of the routine of the headquarters staff, along with the keeping of a watchful eye on legislation thrown into both national and state hoppers.

Supply of Medical Service

Speaking as a statistician and economist, Dr. Frank G. Dickinson, director of the American Medical Association's Bureau of Medical Economic Research, presented a different approach in his discussion of the supply of medical service from what is ordinarily heard.

With considerable emphasis, he declared that the supply of medical service cannot be even faintly indicated by the physician-population ratio of a county, although this is the common yardstick used in all current surveys to measure the adequateness of medical service.

"The traditional physician-population ratio by county has no economic meaning whatsoever," he contended. He queried the doctors about the number of patients from towns outside of the county in which their offices are located as proof of his contention that *trading areas*—not county boundary lines—more properly determine the outline of medical service areas.

The second stage of a study of supply, he said, involves a definition of a "unit of supply of medical service." To quote Dr. Dickinson:

> "Every definition I have discussed with my associates has failed to get general approval. Shall one hour of a doctor's time be the unit of supply?
>
> "'No,' my colleagues say, 'it is the amount of work that a doctor can do in one hour which is the unit of supply.'
>
> "Or shall one patient visit be considered a unit of supply? This, too, my colleagues reject because what the doctor does while he is visiting the patient is the real unit of supply."

He concluded, therefore, that until a practical and efficient unit has been agreed upon, one cannot know very much about the functional aspects of supply. One cannot say that a ratio of 800 persons per physician, or 500 persons per physician, or 1,000 persons per physician is adequate unless one can measure in fixed, unchanging units the amount of medical service which one physician can supply, according to Dr. Dickinson. A doctor seeing most of his patients in the hospital, supplies a greater number of units of medical service than a doctor who has to spend one-third or one-half of his time in his automobile en route to visit patients.

Minnesota "Medical Service Area" Map Studied

A map of medical service areas in Minnesota, marked off by county medical society secretaries, co-operating in a joint project sponsored by the State Association and the AMA, furnished an interesting study and was the subject of Dr. Dickinson's concluding remarks.

Typical of chartered maps prepared by other state medical associations, Dr. Dickinson said, was the general overlapping of medical service areas throughout the state as shown on the map, which reflected, also, an overlapping in trade areas.

These areas, he explained, were determined by the relative attractiveness of the retail stores in different towns—upon the transportation facilities available, especially automobile highways, and upon other attractions such as amusement and service facilities represented by doctors, dentists, hospitals, lawyers, repair shops, beauty parlors and various agencies. Obstacles such as toll bridges, poor roads and congested highways reduce the size of trade areas, Dr. Dickinson said.

In like manner, they cut down the medical service areas which normally include one primary trading center, which draws a considerable amount of trade from surrounding territory, and a number of secondary trading centers representing small towns having one or more physicians.

BORDER STATE DOCTORS MUST HEED NARCOTIC REGULATIONS

Because Minnesota is one of the states bordering on Canada, doctors in this state are sometimes caused considerable embarrassment and inconvenience by the enforcement of certain federal narcotic regulations, about which they have not been informed.

The specific law that they unwittingly break is the Narcotic Drugs Import and Export Act which makes it UNLAWFUL FOR A PHYSICIAN TO CARRY NARCOTIC DRUGS IN HIS MEDICAL BAG BACK AND FORTH BETWEEN THE UNITED STATES AND MEXICO AND THE UNITED STATES AND CANADA.

Narcotic drugs found in the possession of a physician when he re-enters the United States are seized and forfeited in compliance with this regulation. This information is being brought to the attention of state physicians in order that they may be correctly informed with reference to this provision of the federal law and saved the unnecessary embarrassment.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building, Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

David V. Bush, "Health Lecturer," pays $1,000 Fine After Conviction by Jury in Minneapolis

Re State of Minnesota vs. David V. Bush

On April 17, 1947, David V. Bush, sixty-five, Mehoopany, Pennsylvania, was convicted by a jury of seven men and five women in the District Court at Minneapolis, Minnesota, of the crime of practicing healing without a basic science certificate, following a trial lasting eight days. The jury, after listening to the evidence presented by the State of Minnesota, and the testimony offered by Bush and eleven of his followers, needed less than forty-five minutes to find Bush guilty as charged.

Bush, an itinerant health lecturer, who gives his home address as Mehoopany, Pennsylvania, but whose pills, vitamins and other concoctions bear the address of 17234 South Main St., Gardena, California, came to Minneapolis about February 15, and advertised that he would give a health lecture at the Wesley Temple Gymnasium on February 19. The advertisement stated that a collection would be taken up. Knowing in advance Bush's method of doing business, the Minnesota State Board of Medical Examiners immediately ordered an investigation made of his activities. This resulted in a conference with Inspector Eugene Bernath of the Minneapolis Police Department, and police officers were assigned to co-operate with representatives of the Medical Board in following Bush's activities. During Bush's health lecture he announced that he would conduct a so-called health class at the Dyckman Hotel, Minneapolis, commencing the next evening, February 20, and continuing until March 21. Bush also announced that a fee of $3.00 would be charged each person attending the health class. Police officers and a representative of the Medical Board registered for the class. During the next four weeks Bush, under his claim of "free speech," berated the medical profession, law-enforcement officers and others. He would also describe the symptoms of various ailments and would attribute the ailment to the lack or deficiency of the body in certain vitamins and minerals. At the conclusion of this build-up, Bush then offered for sale various pills, powders and other concoctions for which he charged sums ranging from 75 cents to $2. His first lecture was attended by approximately 600 persons and his paid health class was attended by approximately 200 persons, about half of whom purchased some of Bush's preparations each night. When the State of Minnesota was in possession of the facts, the police stepped in and Bush was arrested on March 19, 1947. He fought the case all the way, demanding a preliminary hearing in Municipal Court which was given him, and at the conclusion of which he was held to the District Court for trial by Judge Paul J. Jaroscak under cash bail of $2,000, which was furnished. Bush then demurred to the information and this was overruled by the Hon. John A. Weeks of the District Court of Hennepin County. At the trial, among other things, Bush stated that he had written thirty-two books, had an honorary Ph.D. Degree conferred upon him, and that he was a regularly ordained minister. He also stated that he had been a peanut butter salesman, an actor, and a health lecturer. Following the verdict of guilty in the District Court, the Hon. Levi M. Hall sentenced Bush to pay a fine of $1,000 or to serve nine months in the Minneapolis Workhouse. The Court granted Bush a stay until May 5, 1947, so that he could appeal the case to the Supreme Court of Minnesota if he so desired. However, on April 23, 1947, Bush decided to pay his fine and so far as is known has left the State of Minnesota.

The Minnesota State Board of Medical Examiners desires to express its appreciation for the very fine cooperation received from the Minneapolis Police Department and, particularly, from Inspector Eugene Bernath, police-woman Gladys Cook and the other officers who were assigned to the case. The Medical Board also believes that the splendid results achieved in this case would not have been possible had it not been for the excellent manner in which the trial was conducted for the State of Minnesota by County Attorney Michael J. Dillon, Otto Morck, first assistant county attorney, and Per M. Larson, assistant county attorney.

Saint Paul Painter and Machinist Convicted of Criminal Abortion

Re State of Minnesota vs. Thomas F. Jackamore

On March 27, 1947, Thomas F. Jackamore, fifty-six, 461 Holly Avenue, Saint Paul, Minnesota, was sentenced by the Hon. Royden S. Dane, Judge of the District Court of Ramsey County, to a term of two to eight years at hard labor in the State Prison at Stillwater, following Jackamore's plea of guilty to an information charging him with the crime of abortion. On March 28, 1947, Jackamore was taken before the Hon. Robert V. Rensch, Judge of the District Court of Ramsey County, who had previously, on September 17, 1946, placed Jackamore on probation at the time of his conviction for a similar offense. Judge Rensch made an order on March 31, 1947, revoking the stay of sentence in the previous case and ordered Jackamore to serve two to eight years at hard labor in the State Prison in addition to the sentence imposed by Judge Dane. This means that Jackamore will have to serve four to sixteen years because of his two convictions of the crime of abortion.

In the present case, Jackamore was arrested and charged on March 19, 1947, with the crime of abortion. It was learned that Jackamore had performed ten or twelve criminal abortions during the six months that he was on probation. When arraigned in Court, Jackamore denied his guilt, but subsequently withdrew his plea of not guilty and entered a plea of guilty. Jackamore admitted receiving $150 for each of his criminal abortions which were performed by means of a catheter. Jackamore stated to the Court that he had previously earned his living as a painter and machinist. He has no medical education and holds no license to practice any form of healing in the State of Minnesota. Jackamore was previously convicted in September, 1934, at which time he pleaded guilty to grand larceny in the second degree for participating in the theft of a typewriter from the State of Minnesota. Jackamore served sixty days for that offense.

The Minnesota State Board of Medical Examiners wishes to acknowledge the very fine work done in this case by the Saint Paul Police Department under Chief Charles J. Tierney, and also the splendid work done by Mr. James F. Lynch, County Attorney of Ramsey County. Jackamore has been taken to the State Prison to commence his sentence and it will, undoubtedly, be several years before he is released.

CRUVEILHIER-BAUMGARTEN SYNDROME

(Continued from Page 508)

Other cases will appear, however, which clinically will seem to fall into the group with Cruveilhier-Baumgarten disease, but in which the true anatomic and pathologic condition may not be apparent without necropsy. Unfortunately there is no accurate method of classifying these cases without necropsy.

The case which was just reported falls, I believe, into the group of cases of Cruveilhier-Baumgarten syndrome. This syndrome as was indicated by the review of the literature is characterized by portal hypertension plus evidence of excessive umbilical circulation in the form of an abdominal venous murmur or thrill. In a small group of cases in which this syndrome is present, the necropsy findings may reveal a small liver with little or no fibrosis, a patent umbilical vein and usually splenomegaly. In this small group of cases a distinct etiologic and clinicopathologic disease entity may be present which has been designated Cruveilhier-Baumgarten disease.

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Minnesota Academy of Medicine

Meeting of January 8, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, January 8, 1947. Dinner was served at 7 o'clock and the meeting was called to order at 8:15 by the president, Dr. Ernest M. Hammes.

There were fifty-six members and four guests present.

The first order of business was a discussion of attendance which was discussed by Drs. Lepak and Hall. Dr. Lepak made a motion that the rules in the Constitution be adhered to, and his motion was carried on vote of the membership.

Dean Harold Diehl of the University of Minnesota Medical School was introduced as toastmaster by Dr. Hammes, and made a few well-chosen remarks. Dr. Diehl then introduced Dr. Sweitzer who read his address as retiring president.

PENICILLIN IN THE TREATMENT OF SYPHILIS

S. E. SWEITZER, M.D.
Minneapolis, Minnesota

One of the most interesting subjects in the history of medicine is that of the treatment of syphilis. This has been recently covered in an admirable manner by Moore.[8] He reviewed the chemotherapy of syphilis from 1493 to 1944—a period of 451 years—and divided this into three time periods. The first, lasting 410 years, ran from 1493 to 1903. In this period the treatment of syphilis was entirely empirical and not of much value until about the year 1500 when mercury began to be used and was given in various ways: by mouth, by inhalation, by inunction, and later by injection either intramuscular or intravenous.

The second period ran from 1903 to 1943, or forty years, and saw many changes and much new information about the disease. In 1903, syphilis was for the first time transmitted to experimental animals by Metschnikoff and Roux. In 1905 the treponema pallidum was discovered by Schaudinn, and in 1907 the blood test for syphilis was developed by Wassermann, Neisser and Bruck. These two epoch-making advances were of immense help in the study of the biology of syphilitic infection, and a help in the diagnosis and for determining the effects of treatment.

In 1909 the modern chemotherapy of syphilis began with the discovery of salvarsan "606" by Ehrlich and Hata. This was accomplished after an enormous amount of experimental work by these co-workers. Through the years since 1909 a very good method of treatment was worked out with the use of arsenicals and bismuth, which had taken the place of mercury. This required a continuous treatment of from two to three years, which, besides being an expensive method, left much to be desired from a clinical standpoint, as a treatment of such long duration caused many of the patients to let the treatment lapse before they were cured.

Later an effort was made to give the arsenicals by a continuous drip method over a period of five days. This was later modified by the syringe method. Neosalvarsan was used first and soon replaced by mapharsen. This method was found to be risky, and many deaths occurred from encephalitis, so its use was discarded in many clinics.

The last period in the chemotherapy of syphilis runs from June, 1943, to the present, and marks a real revolutionary change in our concept of what drug or drugs to use and how long to use them. The effort to find a safe and lasting cure is not ended, and changes will and are being made as various methods are tried and evaluated in clinics all over the country.

It all began in June, 1943, when Mahoney, Arnold and Harris[7] demonstrated that penicillin was effective in early syphilis in the rabbit and in man. Because of the importance of the control of the disease, and also of conserving manpower in wartime, an organized investigation of the uses of the drug was begun with the co-operation of the military and governmental agencies and civilian clinics and laboratories.

With the use of penicillin by the army and navy and in many intensive treatment centers, a vast number of cases have been treated by this drug, and many methods have been tried. One of the most important treatment centers was the one set up in Chicago, and much fine work was done there with the very large service that they enjoyed.

The early reports on the results in penicillin-treated cases were glowing and every syphilis clinic in the country started its use as soon as the drug was available. It was found to be a great advance in the therapy of syphilis and to have no mortality attending its use. This happy state of affairs went on until early in 1946 when reports of frequent relapses and slow response to treatment began to appear in the literature, and it became obvious that something had happened to the penicillin.

Because different strains of *Penicillin notatum* and *Penicillin chrysogenum* are used in the manufacture of penicillin, and because different techniques are used in production, five different fractions have been identified. They are F, G, X, K, and dihydro F. Penicillin K is apparently rapidly destroyed or eliminated in the body, and therapeutic levels are not achieved or maintained in the body fluids following ordinary doses.

The early penicillin used was predominately G and was very efficacious. For some months in 1945 all penicillin began to contain increasingly larger amounts of the K factor, and this accounted for the poorer results. The present penicillin is again up to the early qualities and there is an ever-growing possibility that an even better synthetic penicillin will be forthcoming. However, none better than penicillin G is now available.

On February 7 and 8, 1946, there was a meeting of the National Research Council of the United States Public Health Service in Washington, D. C., at which reports were made of studies in forty-three clinics. Some of these papers were later published in the *Journal of the American Medical Association* and give us a summary of what conclusions can be drawn as to the value of penicillin therapy up to that time.

Generally speaking, the earlier in the course of the disease treatment is begun, the better the clinical result. Best results are obtained in the primary sero-negative and early sero-positive cases. Much as with the older form of treatment, there is a distinct drop in the percentage of good results in the cases of secondary syphilis, and more or less indifferent results in late and latent cases of the disease.

It has been found that the administration of mapharsen and penicillin, or penicillin and bismuth, or all three together, give better results than penicillin alone.

The Committee on Medical Research and the United States Public Health Service in a recent report given out show that 6,558 syphilitic patients have been treated with twelve different treatment schedules.[2] The percentage of failure eleven months after treatment was 15 per cent in patients that had received 2,400,000 units of penicillin. By combining 1,200,000 units of penicillin with bismuth, 0.6 to 1 gm., the percentage of failures was cut one-half, as was the case when 300,000 units of penicillin were combined with 320 mg. of mapharsen.

Ingraham and his associates[5] treated forty-nine pregnant women. The women received 2,400,000 units of penicillin only, and of the thirty-seven infants born during the course of this study only one was syphilitic.

Goodwin and Moore[3] treated fifty-seven pregnant women with early syphilis with penicillin. Their recommended dose was 2,400,000. These women gave birth to sixty children, only one of which developed syphilis. Of the remaining fifty-nine, forty-two were followed up long enough to justify a negative diagnosis as regards congenital syphilis. These workers conclude that these results in the prevention of prenatal syphilis are superior to any heretofore attainable with any treatment, and recommend the abandonment of all other methods of treatment.

Platou[11] reported on penicillin in congenital syphilis at the Washington Penicillin Conference in Feruary, 1946. He analyzed the treatment of 191 cases and considered penicillin to be the best agent yet employed in the treatment of congenital syphilis. In his series, serological relapse was 3.6 per cent, and both clinical and serological relapse was 2.6 per cent. The dosage of penicillin for infants should range between a total of 100,000 to 400,000 units per kilogram of body weight. The larger dosage is favored.

Schoch and Alexander[13] in their report on the treatment of early syphilis with penicillin recommended a dosage of at least 2,400,000 units of penicillin and either 40 mg. of mapharsen daily for eight doses, or five injections of bismuth, 0.2 gm. each, on alternate days, or both. For reasons of safety they prefer the bismuth-penicillin combination.

In the reports on the treatment of neurosyphilis with penicillin, Stokes[14] recently came out with a very favorable report. He recommended a dose of at least 4,800,000 units.

O'Leary,[9] on the other hand, was not favorably impressed. He noted some good results in patients with the meningeal forms of the disease but stated that penicillin alone was not capable of controlling the parenchymatous forms of neurosyphilis.

Heller[4] in a recent article reported his conclusions in the evaluation of the treatment of 8,000 cases with various treatment schedules such as the five-day intravenous drip or the syringe method of multiple injections of mapharsen, and the use of penicillin in various doses either alone or with an arsenical or bismuth preparation, or both. He concluded that penicillin with bismuth gave the best results. No deaths were observed when penicillin was used alone. When penicillin was combined with mapharsen and bismuth, there was a mortality of one in 4,312 cases, and with intensive arsenotherapy the mortality ranged from one per 149 cases with the five-day intravenous drip to one in 1,873 cases in those treated by multiple injections.

These mortality figures easily explain why penicillin alone, or with small doses of mapharsen and bismuth, has replaced all previous rapid treatment methods.

Cole[1] recently reported his experience in the treatment of syphilis in pregnancy and recommended a dose of 2,400,000 units or more.

Two of the most recent articles are those of Yampolsky and Heyman[15] and that of O'Leary.[10] Yampolsky and Heyman had good results with penicillin in infantile congenital and acquired syphilis. Their results were poor in interstitial keratitis as well as in juvenile paresis.

O'Leary gave a good review of present-day treatment with penicillin and concluded that it was very good in recent cases and in pregnancy. In latent syphilis it was not so brilliant, and in central nervous system syphilis it gave variable results. O'Leary prefers a schedule of mapharsen, penicillin (2,400,000 units) followed by ten bismuth injections.

The usual method of giving penicillin is an aqueous solution given intramuscularly every three hours for from seven and one-half to ten days. This is done to maintain a constant penicillin level in the blood. Various methods have been tried to give penicillin in a form that would allow slower absorption and less frequent injections. Romansky[12] offered a method using peanut oil and beeswax. He gave a single daily injection of 300,000 units of calcium penicillin in a mixture of peanut oil and beeswax for eight days. These cases were followed from three to six months, and satisfactory results were reported in fifty-eight of the sixty cases.

In a special Venereal Disease Bulletin of the City and County of San Francisco, a report was made of the daily injection of 300,000 units of penicillin in peanut oil and beeswax for a period of ten days. Ninety-eight cases were treated and observed for a period of from three to nine months. The failure rate was 4 per cent. They recommend combining the use of penicillin in oil and wax with the use of the arsenicals and bismuth.

Leifer[6] treated 200 cases of syphilis in various stages with penicillin, 300,000 units in peanut oil and wax daily for eight days. One hundred sixty-five cases were followed. In seventy-three cases of sero-negative primary syphilis he had two clinical relapses, and the final Wassermann tests showed fifty negative, four doubtful and two positive reactions. In sixty-nine cases of sero-positive primary syphilis he had three clinical relapses, and the final Wassermann tests showed thirty-one negative, four doubtful, and eighteen positive. In fifty-eight cases of secondary syphilis he had one clinical relapse, and the final Wassermann tests showed sixteen negative, six doubtful, and twenty-eight positive. He followed them for from two to nine months.

These conflicting reports on the oil and wax method show that this method is still in the experimental stage and is not as yet to be recommended for general use. The combined method of mapharsen, penicillin in oil and wax, and bismuth, may give much better results. This peanut oil and wax method has caused frequent reactions both local and general. Generalized reactions such as urticaria or Herxheimer reactions are not infrequent, while local lesions such as herpes simplex and painful nodules are quite common.

As soon as penicillin became available we began its use in the treatment of syphilis at the Minneapolis General Hospital. We started with a dose of 1,200,000 and soon after increased the dose to 2,400,000. Later, when reports of lessened activity of the penicillin began to come in, we increased the dose to 4,800,000 units. This small series, therefore, is a report of the treatment of syphilis with penicillin alone.

At present we are running another series of cases using mapharsen, penicillin and bismuth. This second series shows promise of giving better results and is the generally accepted method at present. As time goes on, and as reports from the various treatment centers come in, a method will be devised for a safe, rapid and satisfactory treatment of this disease.

Out of a total of 191 cases of syphilis treated with penicillin alone, 119 cases have been observed for at least three months minimum, and for as long as twenty-seven months maximum.

Of these there were twelve sero-negative primary cases. This particular group was observed for from three to sixteen months. Eight cases were followed six months or longer, and all twelve received a dosage of from 1,200,000 units in the first case, 2,400,000 in six cases, up to 5,000,000 in the others. All twelve cases have remained entirely free of any signs or symptoms, and all serologic tests have been negative during the period of observation.

Twenty-two cases of sero-positive primary syphilis were observed at least three months, and eleven cases in this group have been followed twelve months or longer. Fifteen, or 68.2 per cent were negative to all serologic tests at the time of their last examinations. Nine cases of the latter group were females, one of whom delivered a normal child twelve months following her treatment. Seven of the twenty-two cases, including the latter, received 1,200,000 units, seven received 2,400,000 units, and eight received 4,800,000 units total dosage. The six cases (27 per cent) showing strongly positive serologic tests at the time of their last visit were equally distributed between the above total dosages, so there did not seem to be any increased benefits or results derived from increasing the total dosage. One case showed only weakly positive serologic reactions to the more sensitive precipitation tests, and a negative reaction to the Kolmer Wassermann test after four months.

Thirty-one cases with secondary manifestations were followed for periods ranging from four to twenty-nine months. Eleven cases (35.5 per cent) at the time of their last visit still showed strongly positive serologic tests and were considered failures. Two of these were followed for four months, and the other four for sixteen months. Twenty cases (64.5 per cent) reversed to complete negativity and were considered cured.

Nine cases of early latent type of infection were followed for periods ranging from three to eighteen months. Four of these cases (44 per cent) showed negative serologic tests within three months of the time of treatment; five (55 per cent) remained positive and were considered failures.

Thirty-two cases of the late latent type were followed for periods ranging from six months to seventeen months. Only three cases in this group (9 per cent) showed completely negative reactions following treatment and were considered cures. Twenty-nine (91 per cent) remained positive and were considered failures. All of the twenty-nine cases received at least 2,400,000 units, nine cases getting a total of 4,800,000 units.

Twenty-two cases with central nervous system involvement, as evidenced by positive spinal fluid findings, were treated. Nine cases were followed for periods ranging from five to seventeen months. Of these nine cases, two became entirely free of any positive findings. In the other seven there was some decrease in the protein content, and the number of cells found on examination of the spinal fluid. The serologic tests remained positive, however, and in spite of the fact that they showed general improvement physically and an increased feeling of well-being they were considered failures.

There were only two cases of congenital syphilis treated. One infant was first seen at four and one-half months and was given 2,400,000 units of penicillin. This child's blood was completely negative two and one-half months later. The second case, a male infant one year old, was given 1,400,000 units of penicillin and was lost after two months follow-up, at which time the blood serologic tests were still strongly positive.

Two cases of aneurism were treated with penicillin, beginning with 10,000 units every three hours for one day, then 20,000, and slowly up to 50,000 units every three hours. A total of 5,000,000 units was given. One patient did very well and is greatly improved, but the second man died in about three weeks from laryngeal compression after the aneurism increased greatly in size. This unhappy ending should cause us to be very careful in the treatment of cardiovascular syphilis. A preliminary course of bismuth should be given in such cases.

Summary of Cases Treated with Penicillin Alone

In sero-negative primary syphilis all of our cases have remained negative.

In sero-positive primary syphilis only 68.2 per cent became negative, 27 per cent were still positive, and 4.4 per cent were weakly positive.

In secondary syphilis 64.5 per cent became negative and 35.5 per cent were positive.

In early latent syphilis 45 per cent became negative and 55 per cent were positive.

In late latent syphilis only 9 per cent became negative and 91 per cent remained positive.

In a small series of central nervous system syphilis, 22 per cent became negative and the other cases had some changes for the better in the spinal findings and in physical well-being.

Comment

1. Penicillin is a valuable addition to our therapy of syphilis.
2. The earlier it is given the better are the results.
3. A schedule of mapharsen, penicillin and bismuth has replaced all other rapid treatment methods for early syphilis.
4. In the treatment of latent syphilis the same schedule can be used, and it is possible that the results may be as good as the older method of continuous arsenicals and bismuth given over many months.
5. Malaria plus penicillin is the treatment of choice in central nervous system syphilis.
6. In the treatment of cardiovascular or visceral syphilis, a course of bismuth and potassium iodide should precede the administration of penicillin.
7. The results of penicillin therapy in sero-negative primary syphilis and in syphilis in pregnancy are especially brilliant, and these results alone are enough to give penicillin a high place in the treatment of this disease.

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Discussion

Dr. P. A. O'Leary, Rochester, Minn.: I enjoyed Doctor Sweitzer's conservatism in regard to penicillin in the treatment of syphilis, because I, too, have that same attitude. During the early period of our experience with penicillin I had the opportunity of observing a large group of patients with acute syphilis at the Chicago Intensive Treatment Center, and it was apparent early in our experience that penicillin, in small doses or in very large doses, would not cure all patients with acute syphilis. It was likewise evident that the earlier treatment was started in the course of the disease, the better were the results; in other words, in the sero-negative chancre phase of syphilis, before the Wassermann had become positive, successful results approximated 95 per cent, whereas in the individual with the late recurrent lesions of the skin and mucous membranes who had had his disease for fifteen or eighteen months, the incidence of failure approximated 40 per cent. When all of the good systems for the treatment of early syphilis are surveyed, it is apparent that the "cure rate" approximates some 80 per cent under all of the various programs. In other words, it would appear that approximately 80 per cent of the patients with early syphilis respond satisfactorily to most any good system of treatment for syphilis, while the remaining 20 per cent are those who have been resistant heretofore to all forms of treatment and are, in all probability, the individuals who eventually develop the late and serious complications of the disease. It has been my experience that many million units of penicillin do not control the disease in individuals who are in this 20 per cent group, so that I felt it necessary to supplement the penicillin with the addition of mapharsen and bismuth. Likewise, it does not seem advisable to regiment the treatment of patients with early syphilis. One should not treat all patients by the same procedure and expect to derive 100 per cent cure any more than one expects that patients with other infectious diseases will all respond to the same doses of any given drug. It has been my practice to give a second and occasionally a third course of mapharsen-penicillin-bismuth when it is evident that the first course is failing to produce satisfactory results.

Our practice is to give four injections of mapharsen on four successive days, 0.05 gm. each, followed by 3,000,000 units of penicillin, in turn followed by fifteen injections of bismuth. If the results are not satisfactory after a period of four to six months, the course is repeated.

One of the many striking values of penicillin has been the reduction in the incidence of asymptomatic neurosyphilis. Under the old chemotherapeutic procedures, approximately 15 per cent of the patients with the early forms of the disease are found to have positive spinal fluid tests. Under the pencillin regime, we are finding that approximately 2 per cent have evidence of activity in the spinal fluid. In a decade or two from now, this finding might well be substantiated by a reduction in the incidence of clinical neurosyphilis. Although the cure rate at the present time is quite comparable to that of the chemotherapeutic procedures, penicillin does offer the opportunity of permitting more patients to complete the course of treatment, so that the future likewise suggests that although the percentage of cure rate is similar to the arsenic-bismuth combinations, the all-over picture will show, however, a higher incidence of cure because more patients will finish the prescribed treatment.

Penicillin in a combination of beeswax and peanut oil permits of giving one injection a day instead of one every three hours, and in a year from now may further simplify the treatment schemes of early syhpilis. The course of treatment of early syphilis with mapharsen-penicillin-bismuth is shorter, is less expensive, offers decidedly fewer complications and gives a satisfactory result in about 60 per cent of the patients. When taken

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Minneapolis Surgical Society

Stated Meeting Held March 6, 1947

LUMBAR RETROPERITONEAL GANGLIONEUROMA

Review of Literature and Report of Case in Which the Tumor was Removed Surgically

LAWRENCE M. LARSON, M.D., Ph.D. (Surg.)

Summary*

A case of retroperitoneal ganglioneuroma of the left lumbar sympathetic system is reported in a twenty-eighty-year-old white woman. This tumor had produced definite severe pain locally on the left side and possibly on the right side of the abdomen and lower extremity. Complete relief of these symptoms followed its surgical removal. An interesting postoperative sequela of permanent increase in temperature of the lower extremity on the same side is noted, similar to that occurring with sympathectomy for hypertension.

A review of the literature has been made, and a description of the symptoms, findings and pathologic nature of this tumor are recorded.

Microscopically, these tumors are composed of nerve and connective tissue elements with bundles of nerve fibers in longtitudinal and transverse sections surrounded by a connective tissue stroma. Ganglion cells in various degrees of maturity may be present singly or in groups, and are usually associated with nerve processes. The cytoplasm of these cells is granular, their nuclei may be single or multiple, and the stroma may be of varying degrees of denseness.

Clinically and grossly, these tumors are indistinguishable from neuroma, fibroma, sarcoma, and so forth, and it is only by microscopic examination that the true nature of the tumor can be made out. They are no doubt congenital in origin and probably arise from cell nests displaced in embryonic life. They rarely recur when completely removed and practically never metastasize.

The rarity of this lesion is indicated by the fact that there are probably less than fifty similar cases recorded in the literature and there are no similar tumors recorded in the files of the Department of Pathology, University of Minnesota.

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*Complete paper will appear in a later issue.

CONGENITAL DIAPHRAGM OF THE DUODENUM

With Case Report and Preoperative X-Ray Studies

WALLACE I. NELSON, M.D., F.A.C.S.

Summary*

Congenital diaphragm of the duodenum is a developmental anomaly in which a membrane, formed by an infolding of the mucosa and submucosa, extends across the lumen of the duodenum. The diaphragm may be complete or it may present an aperture.

A review of the literature reveals thirty-five reported cases of congenital duodenal diaphragm. Of the thirty-five cases reported in the literature, twelve patients were operated upon. *In only six cases of the entire series was the true nature of the lesion discovered during life.*

The author discusses the embryology, and anatomy, including the relationship to the bile and pancreatic ducts and clinical manifestations of this anomaly. The most important factor in the diagnosis is the ability to recognize the presence of the obstruction when it exists. The differential diagnosis between pyloric stenosis and various extrinsic and intrinsic causes of obstruction is discussed.

A case is presented of a twenty-six-year-old woman in whom preoperative x-rays demonstrated such anomaly; this was proved by operation. No other cases have been found in the literature in which the diagnosis was made by x-ray before operation.

Dilatation of the duodenum proximal to the lesion and the presence of a ring of constriction visible at operation at the level of the diphragm are two signs which should lead the surgeon to search for a diaphragm. Mobilization of the duodenum, duodenotomy, and direct removal of the diaphragm are the surgical procedures advocated in preference to short-circuiting operations.

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*Complete paper, fully illustrated, will appear in a later issue.

TUBERCULOSIS IN OLDER MEN

So much emphasis has been placed on tuberculosis as a serious disease of girls and young women that its greater havoc among men has not received the attention that it deserves. As a result of the more rapid decline of tuberculosis in females in this country there are today 156 deaths among males to every 100 deaths in females and only at ages ten to thirty is the mortality higher in females. Tuberculosis is increasingly becoming a disease of older, occupied men.—Henry D. Chadwick, M.D., and Alton S. Pope, M.D., The Modern Attack on Tuberculosis, The Commonwealth Fund, Revised, 1946.

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all together it is economically and therapeutically a great improvement over the older systems of treatment.

DR. GEORGE FAHR, Minneapolis: I shall confine myself to a discussion of the treatment of syphilitic aortitis with penicillin. This discussion will be based upon my observations of the two cases of luetic aortitis treated by Dr. Sweitzer's staff at the Minneapolis General Hospital, as well as on my experience in treating luetic aortitis, including autopsy observations of patients who have died following treatment with salvarsan and neo-salvarsan. My experience in this field goes back to the pre-salvarsan days and for this very reason is of some value, because experience gleaned in treating luetic aortitis and syhilitic gummas in pre-salvarsan days is very helpful in developing a rational therapy with the more effective drugs available since the invention of "606."

The preceding speakers have indicated that penicillin is a very powerful anti-spirocheticidal drug. The use of strong anti-spirocheticidal drugs can lead to the so-called Herxheimer reaction. In luetic aortitis with a moderately large to large aneurysm, the giving of a strong anti-spirocheticidal agent without the necessary preparation may lead to hemorrhage. This has been demonstrated many times in the experience of the past years, especially when salvarsan was given without proper preparation in the early years of salvarsan and neo-salvarsan use in the treatment of luetic aortitis. When there is swelling about the mouths of the coronary arteries in luetic aortitis, the giving of a strong anti-spirocheticidal agent without previous preparation may lead to swelling and edema in this area, leading to partial or almost complete closure of the mouth of the coronary artery with angina pectoris-like pains and frequently sudden death. Where there is aortic insufficiency in luetic aortitis, the exhibition of a strong anti-syphilitic drug may lead to swelling of the commissures of the aortic valves and increased degree of aortic insufficiency and, if left heart failure is already present to some degree, it may lead to an increased degree of left heart failure with congestion and edema of the lungs, and sometimes to heart failure and death.

The first case of luetic aortitis treated by Dr. Sweitzer's assistants was given penicillin without previous preparation. The patient had a large aneurysm of the ascending and innominate arteries. Within ten days after starting the penicillin, at which time 3,400,000 units had been given, the patient developed a marked enlargement of the aneurysm with hemorrhage into the surrounding tissues and was dead within twelve days. The second case of luetic aortitis treated with penicillin developed severe angina pectoris twenty-four hours after being given the first dose of penicillin. This patient luckily did not die but recovered in a few days and is living at the present time.

When one has a patient with luetic aortitis and wishes to treat him with a strong anti-spirocheticidal drug, it is necessary to begin treatment, in my estimation, with the giving of potassium iodide in large doses for about three weeks. Then a course of bismuth injections should be given bi-weekly, extending over a period of six or eight weeks. After this one can begin cautiously with neo-salvarsan, starting in with 0.15 gm. per injection the first week and reaching 0.45 gm. in four weeks. After giving 0.45 gm. for two weeks, the danger of a Herxheimer reaction is over with, and I can see no objection then to giving neo-salvarsan in large doses (at the rate of 0.45 gm. a week). I am inclined to believe that in the future we will use penicillin in the treatment of luetic aortitis with good results and a great deal of gratification to the internist. In my opinion, the internist who is at the same time a competent cardiologist should treat luetic aortitis, because one must not only treat the syphilis but one must also treat the heart.

The meeting adjourned.

A. E. CARDLE, M.D., *Secretary*

CLINICAL-PATHOLOGICAL CONFERENCE

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basis of pulmonary emphysema although it is possible that mechanical factors associated with the deformity may be contributing factors. In all these cases of kyphoscoliosis, there is usually a rather advanced degree of emphysema.

There is little literature on the subject of cor pulmonale following thoracoplasties for tuberculosis. In the few cases reported, it would again appear that the emphysema of the opposite lung would be the main underlying factor in the development of the cor pulmonale. The fibrosis associated with the tuberculosis would be a contributing one. Dr. Kinsella[7] states that in twenty-five pneumonectomies performed by him, none of these so far shows any signs of right ventricular hypertrophy or dilatation. Two of the twenty-five cases have been followed as long as ten years. Parker[8] in a study of thirty-two cases of essential pulmonary emphysema found enlargement of the right ventricle in 7 per cent of the cases and congestive right heart failure in 44 per cent of the cases. He concluded that the arteriosclerotic changes found in the pulmonary vessels in these cases were secondary to the pulmonary hypertension produced by the emphysema. In pulmonary tuberculosis, silicosis, chronic bronchiectasis, bronchial asthma, and idiopathic pulmonary fibrosis, pulmonary emphysema is almost universally present. When cor pulmonale develops in these cases, it is generally believed that the pulmonary hypertension is the result of the emphysema.

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DEARTH OF NURSES

The American Hospital Association has launched an intensified student nurse enrollment program on a nation-wide scale. The campaign will involve the expenditure of thousands of dollars and will utilize newspaper advertisements, magazine articles, the radio, and cards in street cars, buses and office windows. The various national organizations are invited to co-operate.

Minnesota schools of nursing will offer opportunities for the training of a thousand young women, next fall, according to Miss Thelma Dodds, president of the Minnesota Nurses Association.

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Roster, 1947

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DISTRICT NO. 5

E. M. Hammes, M.D. ....Saint Paul
Counties—Anoka, Chisago, Dakota, Isanti, Kanabec, Mille Lacs, Pine, Ramsey, Sherburne, Washington.

DISTRICT NO. 6

A. E. Cardle, M.D. ....Minneapolis
Counties—Hennepin, Wright.

DISTRICT NO. 7

W. W. Will, M.D. ....Bertha
Counties—Aitkin, Beltrami, Benton, Cass, Clearwater, Crow Wing, Hubbard, Koochiching, Morrison, Stearns, Todd, Wadena.

DISTRICT NO. 8

W. L. Burnap, M.D. ....Fergus Falls
Counties—Becker, Clay, Douglas, Grant, Kittson, Lake of the Woods, Mahnomen, Marshall, Norman, Ottertail, Pennington, Polk, Red Lake, Roseau, Wilkin.

DISTRICT NO. 9

F. J. Elias, M.D. ....Duluth
Counties—Carlton, Cook, Itasca, Lake, St. Louis.

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†Deceased.

County Society Roster

Key to Symbols: *Deceased; † Affiliate, Associate or Life Member; ‡ In Service; §Wife is Member of Woman's Auxiliary.

BLUE EARTH COUNTY MEDICAL SOCIETY

Regular meetings, last Monday of each month
Annual meeting in May
Number of Members: 37

President
§Hoeper, P. G. Mankato

Secretary
§Vezina, J. C. Mapleton

§Andrews, R. N.	Mankato
Batdorf, B. N.	Good Thunder
§Butzer, J. A.	Mankato
§†Dahl, G. A.	Mankato
§Denman, A. V.	Mankato
†Edwards, R. T.	Big Fork, Mont.
§Franchere, F. W.	Lake Crystal
§Fugina, G. R.	Mankato
§Haes, J. E.	Mankato
Hankerson, R. G.	Minnesota Lake
§Hassett, R. G.	Mankato
§Hoeper, P. G.	Mankato
§Howard, E. G.	Mapleton
§Howard, M. I.	Mankato
§Huffington, H. L.	Mankato
§Jones, O. H.	Mankato
§Juliar, R. O.	St. Clair
§Kaufman, W. B.	Mankato
§Kearney, R. W.	Mankato
§Kemp, A. F.	Mankato
§Koenigsberger, Chas.	Mankato
Liedloff, A. G.	Mankato
Luck, Hilda	Mankato
*Macbeth, J. L.	St. Clair
§Mickelson, J. C.	Mankato
§Miller, V. I.	Mankato
§Morgan, H. O.	Amboy
§Penn, G. E.	Mankato
§Samuelson, L. G.	Mankato
§Schlesselman, J. T.	Mankato
Schmidt, P. A.	Good Thunder
§Schmitz, A. A.	Mankato
§Sohmer, A. E.	Mankato
§Stillwell, W. C.	Mankato
§Troost, H. B.	Mankato
§Vezina, J. C.	Mapleton
§Wentworth, A. J.	Mankato
Williams, H. O.	Lake Crystal

BLUE EARTH VALLEY MEDICAL SOCIETY

Faribault and Martin Counties

Regular meetings, first Thursday of month
Annual meeting, first Thursday in November
Number of Members: 30

President
Thayer, E. A. Fairmont

Secretary
Boysen, Herbert Madelia

Armstrong, R. S.	Winnebago
Bailey, R. B.	Fairmont
Barr, W. H.	Wells
Boysen, Herbert	Madelia
Burmeister, R. O.	Welcome
Chambers, W. C.	Blue Earth
Cooper, M.D.	Winnebago
Drexler, G. W.	Blue Earth
Gardner, V. H.	Fairmont
Grogan, J. M.	Ceylon
Hanson, Lewis	Frost
Heimark, J. J.	Fairmont
†Holm, P. F.	Wells
Hunt, R. C.	Fairmont
Hunt, R. S.	Fairmont
Hunte, A. F.	California
Krause, C. W.	Fairmont
McGroarty, J. J.	Easton
Medlin, C. F.	Truman
Mills, J. L.	Winnebago
Parsons, R. L.	Monterey
Rowe, W. H.	Fairmont
Russ, H. H.	Blue Earth
Snyder, C. D.	Kiester
Sommer, A. W.	Elmore
Thayer, E. A.	Fairmont
Vaughan, V. M.	Truman
Virnig, M. P.	Wells
Wilson, C. E.	Blue Earth
§Zemke, E. E.	Fairmont

CAMP RELEASE MEDICAL SOCIETY

Chippewa, Lac Qui Parle and Yellow Medicine Counties

Regular meetings monthly
Annual meeting, December
Number of Members: 27

President
Owens, W. A. Montevideo

Secretary
§Schmidt, P. G., Jr. Granite Falls

§Bergh, L. N.	Montevideo
Boody, G. J., Jr.	Dawson
Burns, F. M.	Milan
Burns, M. A.	Milan
Guilbert, G. D.	Wood, Wis.
§Hauge, M. I.	Clarkfield
Holmberg, L. J.	Canby
Hudec, E. R.	Echo
*Johnson, C. M.	Dawson
§Johnson, V. M.	Dawson
†Jordan, Kathleen	Granite Falls
Jordan, L. S.	Granite Falls
§Kath, R. H.	Wood Lake
Kaufman, W. C.	Appleton
Lee, W. N.	Madison
Lima, Ludvig	Montevideo
Lima, L. R., Jr.	Montevideo
Lundell, C. L.	Granite Falls
§Nelson, M. S.	Granite Falls
Owens, W. A.	Montevideo
Pertl, A. L.	Canby
§Roust, H. A.	Montevideo
Schmidt, P. G., Jr.	Granite Falls
§Smith, L. G.	Montevideo
§Westby, Magnus	Madison
Westby, Nels	Madison

CLAY-BECKER COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 22

President
Rutledge, L. H. Detroit Lakes

Secretary
Hendrickson, R. R. Lake Park

†Aborn, W. H.	Hawley
Bottolfson, B. T.	Moorhead
Carman, J. E.	Detroit Lakes
Duncan, J. W.	Moorhead
Ellington, A. R.	Detroit Lakes
Hagen, O. J.	Moorhead
Haight, G. G.	Audubon
Hendrickson, R. R.	Lake Park
Humphrey, E. W.	Moorhead
Ingebrightson, E. K. G.	Moorhead
Johnson, Olga H.	Moorhead
Larson, Arnold	Detroit Lakes
§Moberg, C. W.	Detroit Lakes
§Oliver, James	Moorhead
Olsen, Gertrude E.	Georgetown
Otto, H. C.	Frazee
Rutledge, L. H.	Detroit Lakes
Seitz, S. B.	Barnesville
Shaw, H. A.	Minneapolis
Simison, Carl	Barnesville
Thysell, F. A.	Moorhead
Thysell, V. D.	Hawley

DAKOTA COUNTY MEDICAL SOCIETY

Number of Members: 8

President
Emond, A. J. Farmington

Secretary
Peck, L. R. Hastings

Burns, L. S.	So. St. Paul
Emond, A. J.	Farmington
Emond, J. S.	Farmington
Field, A. H.	Farmington
Peck, L. D.	Hastings
Peck, L. R.	Hastings
Sanford, J. A.	Farmington
Walter, G. F.	Farmington

EAST CENTRAL MINNESOTA MEDICAL SOCIETY

Anoka, Chisago, Isanti, Kanabec, Mille Lacs, Pine and Sherburne Counties
Regular meetings, February, April, June, August, October, December
Annual meeting, December
Number of Members: 37

President
Gully, R. J................Cambridge
Secretary
Roehlke, A. B..............Elk River

Arends, A. L.......Jamestown, N. D.
§Albrecht, H. H...........Lindstrom
§Blomberg, W. R...........Princeton
Bossert, C. S...................Mora
Brownstone, Manuel.......Sandstone
§Bunker, B. W.................Anoka
Clothier, E. F.............Elk River
Crabtree, J. C.............Princeton
†Dedolph, T. H...........Minneapolis
Dredge, H. P.............Sandstone
§Gully, R. J..............Cambridge
§Halpin, J. E..............Rush City
§Hedenstrom, L. H.........Cambridge
Holmes, A. E..............Rush City
Kapsner, Carl..............Princeton
§Kelsey, C. G...............Hinckley
Larson, Ralph..................Anoka
§Miller, E. W...................Anoka
§Mork, A. H.....................Anoka
§Mork, F. E.....................Anoka
§Nordman, W. F...................Mora
Nygren, W. T.................Braham
§O'Hanlon, J. A.............Lindstrom
§Petersen, P. C...................Mora
§Peterson, C. A..........Chisago City
Riegel G. S.............Taylors Falls
§Roehlke, A. B..............Elk River
Sather, R. N.....................Mora
Schlesselman, George ....Anoka
§Sherman, H. T.............Cambridge
Spurzem, R. J....................Anoka
Stephan, E. L.................Hinckley
§Stratte, A. K...............Pine City
§Swensen, R. G.........North Branch
§Tesch, G. H...............Elk River
Vik, Melvin.....................Onamia
§Whitney, R. A............Cambridge

FREEBORN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, December
Number of Members: 26

President
§Gamble, P. M............Albert Lea
Secretary
Person, J. P....................Alden

§Barr, L. C................Albert Lea
§Branham, D. S............Albert Lea
§Butturff, C. R..............Freeborn
Calhoun, F. W...........Albert Lea
§Demo, Robert A..........Albert Lea
Donovan, D. L...........Albert Lea
§Folken, F. G.............Albert Lea
§Freligh, W. P............Albert Lea
Gamble, J. W.............Albert Lea
§Gamble, P. M............Albert Lea
Gullixson, A. ....Albert Lea
Hansen, T. M..................Alden
Kamp, B. A...............Albert Lea
Leopard, B. A............Albert Lea
§Neel, H. B...............Albert Lea
Nelson, Clayton E. J.....Albert Lea
§Nesheim, M. O. ....Emmons
Palmer, C. F.............Albert Lea
Palmer, W. L.............Albert Lea
Palmerton, E. S..........Albert Lea
§Person, J. P...................Alden
§Prins, L. R..............Albert Lea
Schultz, J. A.............Albert Lea
§Swanson, R. R...........Albert Lea
Wenzel, R. E.............Albert Lea
§Whitson, S. A............Albert Lea

GOODHUE COUNTY MEDICAL SOCIETY

Regular meetings, none
Annual meeting, December
Number of Members: 24

President
§Hartnagel, G. F...........Red Wing
Secretary
§Brusegard, J. F............Red Wing

Aanes, A. M...............Red Wing
Akins, W. M................Red Wing
Anderson, S. H............Red Wing
Brusegard, J. F. ....Red Wing
§Claydon, H. F............Red Wing
§†Claydon, L. E............Red Wing
§Flom, M. G...............Zumbrota
§Graves, R. B..............Red Wing
§Hartnagel, G. F..........Red Wing
§Hedin, R. F...............Red Wing
Johnson, A. E.............Red Wing
†Jones, A. W..............Red Wing
§Juers, E. H...............Red Wing
§Kimmel, G. C.............Red Wing
Larson, Ralph H.......Cannon Falls
§Liffrig, W. W.............Red Wing
Mack, J. J.........Little Rock, Ark.
McGuigan, H. T...........Red Wing
Odessky, Louis...............St. Paul
§Sherman, R. V............Red Wing
†Smith, M. W...............Red Wing
§Steffens, L. A............Red Wing
§Weir, J. R.................Goodhue
Williams, M. R.........Cannon Falls

HENNEPIN COUNTY MEDICAL SOCIETY

Regular meetings, first Monday each month, October through May
Annual meeting, October
Number of Members: 771

President
Boies, L. R.............Minneapolis
Secretary
Jones, W. R.............Minneapolis
Executive Secretary
Mr. J. H. Baker.........Minneapolis

Aagaard, G. N., Jr.......Minneapolis
§Abramson, Milton........Minneapolis
Adkins, C. D............'.Minneapolis
Ahern, E. E.............Minneapolis
Alexander, H. A.........Minneapolis
Alger, E. W.............Minneapolis
§Aling, C. A.............Minneapolis
†§Aling, C. P.............Minneapolis
§†Allen, H. W............Minneapolis
§Altnow, H. O............Minneapolis
§Andersen, A. G. ....Minneapolis
§Andersen, S. C...........Minneapolis
§Anderson, D. D..........Minneapolis
Anderson, D. P..........Minneapolis
§Anderson, E. D..........Minneapolis
§Anderson, E. R..........Minneapolis
§Anderson, F. J..........Minneapolis
§Anderson, J. K..........Minneapolis
§Anderson, K. W..........Minneapolis
§Anderson, U. S..........Minneapolis
Anderson, W. T..........Minneapolis
Andreassen, E. C.........Minneapolis
Andresen, K. D..........Minneapolis
§Andrews, R. S..........Minneapolis
§Arey, S. L..............Minneapolis
§Arlander, C. E..........Minneapolis
§Arling, L. S.............Minneapolis
Arnold, Ann W..........Minneapolis
Arnold, D. C.............Minneapolis
§Arvidson, C. G..........Minneapolis
§Aune, Martin............Minneapolis
†Aurand, W. H...........Minneapolis
Baird, J. W..............Minneapolis
§Baken, M. P.............Minneapolis
Baker, A. B..............Minneapolis
Baker, A. T..............Minneapolis
§Baker, E. L..............Minneapolis
Baker, Looe..............Minneapolis
§Balkin, S. G.............Minneapolis
Bank, H. E...............Minneapolis
†Barber, J. P.............Minneapolis
Barr, R. N. ....Minneapolis
§Barron, Moses...........Minneapolis
Bateman, Olive A. L.......Rochester
§Baxter, S. H............Minneapolis
§Bayard, H. F............Minneapolis
§Beach, Northrop.........Minneapolis
†Beard, A. H.............Minneapolis
§†Beckman, W. G.................
San Francisco, Calif.
§Bedford, E. W...........Minneapolis
Beiswanger, R. H. ......Minneapolis
†Bell, E. T...............Minneapolis
Belzer, M. S.............Minneapolis
Benesh, L. A............Minneapolis
Benesh, N. G............Minneapolis
§Benjamin, A. E.........Minneapolis
§Benjamin, E. G.........Minneapolis
§Benjamin, H. G.........Minneapolis
§Benn, F. G..............Minneapolis
Berger, A. G............Minneapolis
Bergh, G. S..............Minneapolis
Bergh, Solveig M. ......Minneapolis
§Berkwitz, N. J..........Minneapolis
Berman, Reuben.........Minneapolis
§Bessesen, A. N., Jr......Minneapolis
§Bessesen, D. H..........Minneapolis
Bessesen, W. A..........Minneapolis
Bieter, R. N.............Minneapolis
‡Blake, Alan...................Hopkins
§Blake, J. A...................Hopkins
§Blake, James..................Hopkins
†Blake, P. S. ....Minneapolis
Bloedel, T. J....................Osseo
Blumenthal, J. S.........Minneapolis
Bockman, M. W. H.....Minneapolis
§Boehrer, J. J............Minneapolis
§Boies, L. R..............Minneapolis
†Booth, A. E. ....Minneapolis
§Boreen, C. A............Minneapolis
Borgeson, E. J..........Minneapolis
§Borman, C. N...........Minneapolis
Borowicz, L. A..........Minneapolis
§Bowers, G. G...........Minneapolis
Boynton, Ruth E.........Minneapolis
§Bratrud, A. F...........Minneapolis
§Brekke, H. J............Minneapolis
Brill, Alice K...........Minneapolis
Brooks, C. N............Minneapolis
†Brown, E. D.............Paynesville
Brown, F. J..............Minneapolis
Brown, J. R..............Minneapilis
†Brown, S. P.............Minneapolis
Brown, W. D............Minneapolis
Brutsch, G. C...........Minneapolis
§Buchstein, H. F.........Minneapolis
Buirge, Raymond.........Minneapolis
Bulkley, Kenneth........Minneapolis
Bushard, W. J...........Minneapolis
§Buzzelle, L. K..........Minneapolis
§Cable, M. L.............Minneapolis
§Cabot, C. M.............Minneapolis
§Cabot, V. S.............Minneapolis
Cady, L. H...............Minneapolis
Callerstrom, G. W.......Minneapolis
Cameron, Isabell L......Minneapolis
Camp, W. E..............Minneapolis
Campbell, L. M..........Minneapolis
§Campbell, O. J..........Minneapolis
§Cardle, A. E.............Minneapolis
§Carey, J. B..............Minneapolis
§Carlson, Lawrence.......Minneapolis
§Carlson, L. T............Minneapolis

§Caron, R. P.	Minneapolis
Caspers, C. G.	Minneapolis
§Cavanor, F. T.	Minneapolis
Ceder, E. T.	Minneapolis
Challman, S. A.	Minneapolis
Chesley, A. J.	Minneapolis
§Christenson, G. R.	Minneapolis
§Christianson, H. W.	Minneapolis
*†Clark, H. S.	Minneapolis
Clarke, E. K.	Minneapolis
§Clay, L. B.	Minneapolis
Cochrane, R. F.	Minneapolis
Cohen, B. A.	Minneapolis
§Cohen, S. S.	Oak Terrace
Colp, E. A.	Robbinsdale
Cooper, J. P.	Wayzata
Condit, W. H.	Minneapolis
§Corbett, J. F.	Minneapolis
Corniea, A. D.	Minneapolis
§Correa, D. H.	Minneapolis
§Coulter, E. B.	Minneapolis
Cowan, D. W.	Minneapolis
§Cranmer, R. R.	Minneapolis
†Cranston, R. W.	Minneapolis
§Creevy, C. D.	Minneapolis
§Creighton, R. H.	Minneapolis
§Culligan, L. C.	Minneapolis
Cumming, H. A.	Minneapolis
Cutts, George	Minneapolis
§Dady, E. E.	Minneapolis
Dahl, E. O.	Minneapolis
§Dahl, J. A.	Minneapolis
§Daniel, D. H.	Minneapolis
§Davis, J. C.	Minneapolis
Davis, W. I.	Mound
§del Plaine, C. W.	Minneapolis
Dennis, Clarence	Minneapolis
§Devereaux, T. J.	Wayzata
§Diehl, H. S.	Minneapolis
Diessner, H. D.	Minneapolis
§Dorge, R. I.	Minneapolis
§Dornblaser, H. D.	Minneapolis
§Dorsey, G. C.	Minneapolis
Dowidat, R. W.	Minneapolis
Doxey, G. L.	Minneapolis
§Doyle, L. O.	Minneapolis
§Drake, C. R.	Minneapolis
§Drill, H. E.	Hopkins
§Duff, E. R.	Minneapolis
§Dukelow, D. A.	Minneapolis
†Dumas, A. G.	Minneapolis
§Dunlap, E. H.	Minneapolis
§Dunn, G. R.	Minneapolis
§Dupont, J. A.	Excelsior
§Duryea, W. M.	Minneapolis
†Dutton, C. E.	Minneapolis
§Dvorak, B. A.	Minneapolis
§Dwan, P. F.	Minneapolis
§Dworsky, S. D.	Minneapolis
Ebert, R. V.	Minneapolis
§*Ederer, J. J.	Minneapolis
§Ehrenberg, C. J.	Minneapolis
§Eich, Matthew	Minneapolis
Eisenstadt, D. H.	Minneapolis
Eisenstadt, W. S.	Minneapolis
§Eitel, G. D.	Minneapolis
§Ellison, D. E.	Minneapolis
§Engelhart, P. C.	Minneapolis
Englund, E. F.	Minneapolis
§Engstrand, O. J.	Minneapolis
Erickson, C. O.	Minneapolis
Erickson, D. J.	Minneapolis
§Erickson, R. F.	Minneapolis
§Ericson, R. M.	Minneapolis
§Erlich, S. P.	Minneapolis
§Evans, E. T.	Minneapolis
Evans, R. D.	Minneapolis
Fahr, G. E.	Minneapolis
§Fansler, W. A.	Minneapolis
†Farsht, I. J.	Minneapolis
†Farkas, J. V.	Minneapolis
Feeney, J. M.	Minneapolis
§Feinstein, J. Y.	Minneapolis
Fenger, E. P. K.	Oak Terrace
§Fetterly, Warren	Minneapolis
§Fink, L. W.	Minneapolis
§Fink, W. H.	Minneapolis
†Fitzgerald, D. F.	Minneapolis
§Fjelstad, C. A.	Minneapolis
Fleeson, W. H.	Minneapolis
§Foker, L. W.	Minneapolis
§Ford, W. H.	Minneapolis
Foster, W. K.	Minneapolis
§Fowler, L. H.	Minneapolis
Fox, J. R.	Minneapolis
Frane, D. B.	Minneapolis
Frank, W. L., Jr.	Minneapolis
Frear, Rosemary R.	Minneapolis
§Fredericks, G. M.	Minneapolis
§Fredlund, M. L.	Minneapolis
§Fried, L. A.	Minneapolis
§Friedell, Aaron	Minneapolis
Friend, A. W.	Minneapolis
Frost, J. B.	Minneapolis
Frykman, H. M.	Minneapolis
Fuller, Alice H.	Minneapolis
§Funk, V. K.	Oak Terrace
Galligan, Margaret M. D.	Minneapolis
§Galloway, J. B.	Minneapolis
§Gammell, J. H.	Minneapolis
Garten, J. L.	Minneapolis
Gibbs, R. W.	Minneapolis
§Giebenhaan, J. N.	Minneapolis
§Giere, J. C.	Minneapolis
§Giere, R. W.	Minneapolis
†Giessler, P. W.	Minneapolis
Gilbert, M. G.	Minneapolis
*§Gilles, F. L.	Minneapolis
Gingold, B. A.	Minneapolis
§Girvin, R. B.	Minneapolis
§‡Goldberg, I. M.	Minneapolis
§Goldman, T. I.	Minneapolis
Goldner, M. Z.	Minneapolis
§Good, H. D.	Minneapolis
Gordon, P. E.	Minneapolis
Gratzek, F. R.	Minneapolis
§Grave, Floyd	Minneapolis
Gray, R. C.	Minneapolis
Green, R. G.	Minneapolis
Grimes, Marian	Minneapolis
§Gronvall, P. R.	Minneapolis
Groskloss, H. H.	Minneapolis
*Gunderson, N. A.	Minneapolis
§Gushurst, E. G.	Minneapolis
§Gustason, H. T.	Minneapolis
Haberer, Helen R.	Minneapolis
Hagen, P. S.	Minneapolis
§‡Hagen, W. S.	Minneapolis
†Haggard, G. D.	Minneapolis
Hall, G. H., Jr.	Minneapolis
Hall, H. B.	Minneapolis
*Hall, J. M.	Minneapolis
Hall, W. H.	Minneapolis
Hallberg, C. A.	Minneapolis
*§Hamel, A. L.	Minneapolis
§Hamlin, G. B.	Minneapolis
§†Hammerstad, L. M.	Minneapolis
Hammond, A. J.	Minneapolis
§Hannah, H. B.	Minneapolis
§Hansen, C. O.	Minneapolis
§Hansen, E. W.	Minneapolis
Hansen, Olga S.	Minneapolis
§Hanson, H. J.	Minneapolis
Hanson, H. V.	Minneapolis
§Hanson, M. B.	Minneapolis
§Hanson, W. A.	Minneapolis
§Happe, L. J.	Minneapolis
§*Harrington, C. D.	Wayzata
*§†Harrington, F. E.	Minneapolis
§Hart, V. L.	Minneapolis
§Hartig, Hermina	Minneapolis
§†Hartzell, T. B.	Minneapolis
§Hastings, D. R.	Minneapolis
Hastings, D. W.	Minneapolis
Hauge, E. T.	Minneapolis
Haugen, J. A.	Minneapolis
§Haven, W. K.	Minneapolis
§Hawkinson, R. P.	Minneapolis
§Hayes, J. M.	Minneapolis
‡Hays, A. T.	Minneapolis
§Head, D. P.	Minneapolis
§Head, G. D.	Minneapolis
Hedback, A. E.	Minneapolis
§Heim, R. R.	Minneapolis
†Hendrickson, J. F.	Minneapolis
§Henrikson, E. C.	Minneapolis
†Henry, C. E.	Kirksville, Mo.
Henry, M. O.	Minneapolis
Herbert, W. L.	Minneapolis
Hertzog, A. J.	Minneapolis
Higgins, J. H.	Minneapolis
*†Hill, Eleanor J.	Minneapolis
§Hillis, S. J.	Minneapolis
Hinckley, R. G.	Minneapolis
§Hirshfield, F. R.	Minneapolis
‡Hitchcock, C. R.	Minneapolis
†Hoaglund, A. W.	Santa Monica, Calif.
§Hodge, S. V.	Minneapolis
†Hoffbauer, F. W.	Minneapolis
§Hoffert, H. E.	Minneapolis
§Hoffman, R. A.	Minneapolis
§Hoffman, W. L.	Minneapolis
*†Holl, P. M.	Minneapolis
§Holmberg, C. J.	Minneapolis
Holzapfel, F. C.	Minneapolis
§Horns, R. C.	Minneapolis
Houkom, Bjarne	Minneapolis
Hovland, M. L.	Minneapolis
Howard, S. E.	Minneapolis
Hudson, G. E.	Minneapolis
§Huenekens, E. J.	Minneapolis
§Hultkrans, J. C.	Minneapolis
Hultkrans, R. E.	Minneapolis
Hurd, Annah	Minneapolis
§‡Hutchinson, C. J.	Minneapolis
Hutchinson, D. W.	Oak Terrace
§Hymes, Charles	Minneapolis
§Hynes, J. E.	Minneapolis
Iams, A. M.	Minneapolis
Irvine, H. G.	Minneapolis
§Iverson, R. M.	Minneapolis
*†Jackson, C. M.	Minneapolis
‡James, E. M.	Minneapolis
§Jensen, Harry	Minneapolis
§†Jensen, M. J.	Minneapolis
Jensen, N. K.	Minneapolis
Jensen, R. A.	Minneapolis
†Jerome, Bourne	Minneapolis
§Johnson, A. B.	Minneapolis
Johnson, A. E.	Minneapolis
Johnson, Evelyn V.	Minneapolis
Johnson, E. W.	Minneapolis
§Johnson, H. A.	Minneapolis
§Johnson, J. A.	Minneapolis
†Johnson, J. W.	Minneapolis
§Johnson, Julius	Minneapolis
§Johnson, M. R.	Minneapolis
†Johnson, N. A.	Santa Monica, Calif.
Johnson, Norman	Minneapolis
Johnson, N. T.	Minneapolis
Johnson, R. A.	Minneapolis
‡Johnson, Raymond A.	Minneapolis
Johnson, R. E.	Minneapolis
Johnson, Y. T.	Minneapolis
Jones, H. W., Jr.	Minneapolis
§Jones, W. R.	Minneapolis
Josewich, Alexander	Minneapolis
§Judd, W. H.	Washington, D. C.
§Jurdy, M. J.	Minneapolis
Kabler, P. W.	Minneapolis
Kalin, O. T.	Minneapolis
Kaplan, J. J.	Minneapolis
‡Karleen, C. I.	Minneapolis
Karlstrom, A. E.	Minneapolis
§Kaufman, H. J.	Minneapolis
§Kelby, G. M.	Minneapolis
Kelly, J. P.	Minneapolis
§Kennedy, C. C.	Minneapolis
Kennedy, Jane F.	Minneapolis
§Kerkhof, A. C.	Minneapolis
Kertesz, G.	Minneapolis
†King, E. A.	Minneapolis
King, F. W.	Oak Terrace
§Kinsella, T. J.	Minneapolis
§Kistler, A. J.	Minneapolis
§†Kistler, C. M.	Minneapolis
§Knapp, M. E.	Minneapolis
§Knight, R. R.	Minneapolis
Knight, R. T.	Minneapolis
§Koepcke, G. M.	Minneapolis
Koller, H. M.	Minneapolis
Koller, L. R.	Minneapolis
Korchik, J. P.	Minneapolis
Koschnitzke, Herman	Minneapolis
§Koucky, R. W.	Minneapolis
Kucera, F. J.	Hopkins
§Kucera, W. J.	Minneapolis
‡Lagaard, S. M.	Minneapolis
Lajoie, J. M.	Minneapolis
§Lang, L. A.	Minneapolis
§Lapierre, A. P.	Minneapolis
§Lapierre, J. T.	Minneapolis
Larsen, F. W.	Minneapolis
§Larson, C. M.	Minneapolis
Larson, E. A.	Minneapolis
§Larson, Lawrence M.	Minneapolis
§Larson, L. M.	Oak Terrace
§Larson, P. N.	Minneapolis
§La Yake, R. T.	Minneapolis
Law, S. G.	Minneapolis
§Laymon, C. W.	Minneapolis
†Leavitt, H. H.	Minneapolis
Lebowske, J. A.	Minneapolis
Lee, H. M.	Minneapolis
§Leland, H. R.	Minneapolis
§Lenz, O. A.	Minneapolis
§Leonard, L. J.	Minneapolis
§Leonard, Sam	Minneapolis
Lillehei, E. J.	Robbinsdale
‡Lind, C. J., Jr.	Minneapolis
Lind, C. J.	Minneapolis
Lindberg, A. C.	Minneapolis
§Lindberg, V. L.	Minneapolis
§Lindbloom, A. E.	Minneapolis
§Lindgren, R. C.	Minneapolis
§Lindquist, R. H.	Minneapolis
§Linner, H. P.	Minneapolis
Lippman, E. S.	Minneapolis
§Lipschultz, Oscar	Minneapolis
§Litchfield, J. T.	Minneapolis
Litman, A. B.	Minneapolis
§†Litzenberg, J. C.	Minneapolis
§Lofsness, S. V.	Minneapolis
§Logefeil, R. C.	Minneapolis
§Loomis, E. A.	Minneapolis
Lovett, Beatrice R.	Oak Terrace
Lowry, Elizabeth C.	Minneapolis
Lowry, Thomas	Minneapolis
§Lufkin, N. H.	Minneapolis
Lund, C. J.	Minneapolis

Lundberg, Ruth I.	Minneapolis
Lundblad, R. A.	Minneapolis
Lundblad, S. W.	Minneapolis
§Lundgren, A. C.	Minneapolis
§Lundquist, E. F.	Minneapolis
§Lynch, M. J.	Minneapolis
Lysne, Henry	Minneapolis
§Lysne, Myron	Minneapolis
†MacDonald, A. E.	Minneapolis
§MacDonald, D. A.	Minneapolis
§Mach, F. B.	Minneapolis
MacKinnon, D. C.	Minneapolis
§MacMillan, D. G.	Minneapolis
Macnie, J. S.	Minneapolis
§Maeder, E. C.	Minneapolis
§Maland, C. O.	Minneapolis
§Mariette, E. S.	Oak Terrace
§Mark, D. B.	Minneapolis
§Marking, G. H.	Minneapolis
Martinson, C. J.	Wayzata
†Martinson, E. J.	Wayzata
†Matchan, G. R.	Minneapolis
Matthews, Justus	Minneapolis
§Mattill, P. M.	Oak Terrace
§Mattson, Hamlin	Minneapolis
§Maxeiner, S. R.	Minneapolis
§†McCaffrey, F. J.	Minneapolis
McCarthy, Donald	Minneapolis
McCartney, J. S.	Minneapolis
‡McCrimmon, H. P.	Minneapolis
†McDaniel, Orianna	Minneapolis
§McFarland, A. H.	Minneapolis
§McGandy, R. F.	Minneapolis
§McGeary, G. E.	Minneapolis
§McInerny, M. W.	Minneapolis
McKelvey, J. L.	Minneapolis
§McKenzie, C. H.	Minneapolis
§McKinlay, C. A.	Minneapolis
†McKinley, J. C.	Minneapolis
§McKinney, F. S.	Minneapolis
McMurtrie, W. B.	Minneapolis
§McPheeters, H. O.	Minneapolis
†McQuarrie, Irvine	Minneapolis
Meller, R. L.	Minneapolis
§Merkert, C. E.	Minneapolis
§Merkert, G. L.	Minneapolis
†Merrick, Charlotte T.	Minneapolis
†Merrill, Elizabeth	Minneapolis
§Meyer, A. J.	Minneapolis
§Meyer, E. L.	Minneapolis
Michael, J. C.	Minneapolis
Michel, H. H.	Minneapolis
§Michelson, H. E.	Minneapolis
†Mickelsen, Emma F.	Minneapolis
§Miller, Harold E.	Minneapolis
Miller, Hugo E.	Minneapolis
§Miller, J. C.	Minneapolis
§Milton, J. S.	Minneapolis
§Minsky, A. A.	Minneapolis
Mitchell, B. D.	Minneapolis
Mitchell, E. C.	Mound
Mitchell, M. E.	Minneapolis
§Mitchell, M. T.	Minneapolis
§Moe, J. H.	Minneapolis
§Moen, J. K.	Minneapolis
Monahan, Elizabeth S.	Minneapolis
§Monson, E. M.	Minneapolis
Moos, D. J.	Minneapolis
Moren, Edward	Minneapolis
Morrison, A. W.	Minneapolis
Morrison, Charlotte J.	Minneapolis
§Morse, R. W.	Minneapolis
§Murphy, E. P.	Minneapolis
§Murphy, I. J.	Minneapolis
†Musty, N. J.	Minneapolis
§Myers, J. A.	Minneapolis
§Naslund, A. W.	Minneapolis
§Neal, J. M.	Minneapolis
Neary, R. P.	Minneapolis
Nelson, E. N.	Minneapolis
†Nelson, H. S.	Los Angeles, Calif.
§Nelson, M. C.	Minneapolis
§Nelson, N. Harvey	Minneapolis
§Nelson, O. L. N.	Minneapolis
§‡Nelson, W. I.	Minneapolis
Nesbitt, Samuel	Minneapolis
Nesset, L. B.	Marshall
Noonan, W. J.	Minneapolis
§Nord, Robert E.	Minneapolis
§Noran, Harold H.	Minneapolis
§Nordin, G. T.	Minneapolis
Nordland, Martin	Minneapolis
§†Noth, H. W.	Minneapolis
§Nydahl, M. J.	Minneapolis
§Nylander, E. G.	Minneapolis
Nystrom, Ruth G.	Minneapolis
§Oberg, C. M.	Minneapolis
†O'Brien, W. A.	Minneapolis
O'Donnell, J. E.	Minneapolis
Olsen, E. G.	Minneapolis
§Olson, A. C.	Minneapolis
Olson, J. W.	Minneapolis
†Olson, O. A.	Minneapolis
§†Olson, R. G.	Minneapolis
§Oppen, E. G.	Minneapolis
Otten, D. E.	Minneapolis
†Owre, Oscar	Minneapolis
§Paine, J. R.	Minneapolis
Palen, B. J.	Minneapolis
§*Patterson, W. E.	Minneapolis
§Peppard, T. A.	Minneapolis
Perlman, E. C.	Minneapolis
‡Petersen, G. L.	Minneapolis
§†Petersen, J. R.	Minneapolis
Peterson, Henry	Minneapolis
Peterson, H. W.	Minneapolis
Peterson, L. J.	Minneapolis
Peterson, N. P.	Minneapolis
Peterson, O. H.	Minneapolis
§Peterson, P. E.	Minneapolis
§Peterson, W. C.	Minneapolis
§Petit, J. V.	Minneapolis
§Petit, L. J.	Minneapolis
Pewters, J. T.	Minneapolis
Peyton, W. T.	Minneapolis
§Pfunder, M. C.	Minneapolis
§Phelps, K. A.	Minneapolis
Plass, H. F. R.	Minneapolis
§Platou, E. S.	Minneapolis
§Pleissner, K. W.	St. Louis Park
§Plimpton, N. C.	Minneapolis
§Pohl, J. F.	Minneapolis
§Pollard, D. W.	Minneapolis
§Pollock, D. K.	Minneapolis
§Polzak, J. A.	Minneapolis
Poppe, F. H.	Minneapolis
§Potter, R. B.	Minneapolis
Pratt, F. J.	Minneapolis
§Preine, I. A.	Minneapolis
Preston, P. J.	Minneapolis
Priest, R. E.	Minneapolis
§†Prim, J. A.	Minneapolis
Proffitt, W. E.	Minneapolis
§Proshek, C. E.	Minneapolis
§Pumala, E. E.	Minneapolis
§Quello, R. O. B.	Minneapolis
§*†Quinby, T. F.	Minneapolis
§Quist, H. W.	Minneapolis
†Quist, H. W., Jr.	Minneapolis
§Ransom, H. R.	Osseo
Reader, D. R.	Minneapolis
Regan, J. J.	Minneapolis
§Regnier, E. A.	Minneapolis
Reid, L. M.	Excelsior
§Reif, H. A.	Minneapolis
§Reiley, R. E.	Minneapolis
§Reynolds, J. S.	Minneapolis
§Rice, C. O.	Minneapolis
§Richdorf, L. F.	Minneapolis
§Rieke, W. W.	Wayzata
Rigler, L. G.	Minneapolis
Riordan, Elsie M.	Minneapolis
§Risch, R. E.	Minneapolis
Rizer, D. K.	Minneapolis
Rizer, R. I.	Minneapolis
§*Roan, C. M.	Minneapolis
Roan, O. M.	Minneapolis
Robb, E. F.	Minneapolis
§Robbins, O. F.	Minneapolis
Roberts, L. J.	Minneapolis
Roberts, S. W.	Minneapolis
§Roberts, W. B.	Minneapolis
Robitshek, E. C.	Minneapolis
§Rodda, F. C.	Minneapolis
§Rodgers, C. L.	Minneapolis
Rogers, G. E. B.	Minneapolis
Rosendahl, F. G.	Minneapolis
§Rosenwald, R. M.	Minneapolis
Roskilly, G. C. P.	Minneapolis
§Ross, A. J.	Minneapolis
§Rucker, W. H.	Minneapolis
Rud, N. E.	Minneapolis
Rudell, G. L.	Minneapolis
Russeth, A. N.	Minneapolis
§Rusten, E. M.	Minneapolis
§Ryding, V. T.	Howard Lake
§Sadler, W. P.	Minneapolis
§St. Cyr, K. J.	Robbinsdale
§Saliterman, B. I.	Minneapolis
§*Salt, C. G.	Minneapolis
Samuelson, Samuel	Minneapolis
§Sandt, K. E.	Minneapolis
§Sawatzky, W. A.	Minneapolis
§Schaaf, F. H. K.	Minneapolis
§Schaefer, W. G.	Minneapolis
†Scheldrup, N. H.	Minneapolis
§Scherer, L. R.	Minneapolis
Schiele, B. C.	Minneapolis
§Schmidt, G. F.	Minneapolis
†Schmitt, A. F.	Minneapolis
†Schmitt, S. C.	Los Angeles, Calif.
†Schneider, J. P.	Minneapolis
Schneider, R. A.	Minneapolis
†Schneidman, N. R.	Minneapolis
Schottler, M. E.	Minneapolis
§Schultz, H. J.	Minneapolis
§‡Schultz, P. J.	Minneapolis
†Schussler, O. F.	Minneapolis
§Schwartz, V. J.	Minneapolis
†Schwyzer, Gustav	Minneapolis
†Scott, F. H.	Minneapolis
§Scott, H. G.	Minneapolis
Seaberg, J. A.	Minneapolis
§†Seashore, Gilbert	Minneapolis
Seham, Max	Minneapolis
§Seifert, M. H.	Excelsior
§Selieskog, S. R.	Minneapolis
§Shandorf, J. F.	Minneapolis
Shaperman, Eva P.	Minneapolis
§Shapiro, M. J.	Minneapolis
Sharp, D. V.	Minneapolis
§Siegmann, W. C.	Minneapolis
Silver, J. D.	Minneapolis
§†Simons, J. H.	Minneapolis
Simonson, D. B.	Minneapolis
§Simpson, E. D.	Minneapolis
Sinykin, M. B.	Minneapolis
Siperstein, D. M.	Minneapolis
†§Sivertsen, Andrew	Nisswa
§Sivertsen, Ivar	Minneapolis
§Skjold, A. C.	Minneapolis
§‡Smisek, F. M.	Minneapolis
§Smith, Adam M.	Minneapolis
§Smith, Archie M.	Minneapolis
Smith, B. A., Jr.	Minneapolis
Smith, H. R.	Minneapolis
Smith, Margaret I.	Minneapolis
§Smith, N. M.	Minneapolis
Smith, N. R.	Minneapolis
Soderlind, R. T.	Minneapolis
§Solhaug, S. B.	Minneapolis
§Spano, J. P.	Minneapolis
§Spink, W. W.	Minneapolis
§Spratt, C. N.	Minneapolis
Stahr, A. C.	Hopkins
§Stanford, C. E.	Minneapolis
State, David	Minneapolis
Stebbins, T. L.	Minneapolis
Stein, K. E.	Lakeville
§Stelter, L. A.	Minneapolis
Stennes, J. L.	Minneapolis
Stenstrom, Annette T.	Minneapolis
§Stewart, R. I.	Minneapolis
Stoesser, A. V.	Minneapolis
†Stomel, Joseph	Los Angeles, Calif.
†Strachauer, A. C.	Minneapolis
Strom, G. W.	Minneapolis
Stromgren, D. T.	Minneapolis
§Stromme, W. B.	Minneapolis
Stone, S. P.	Minneapolis
§Strout, G. E.	Minneapolis
§Sturre, J. R.	Minneapolis
§Stuurmans, S. H.	Minneapolis
§Sukov, Marvin	Minneapolis
Sullivan, R. M.	Minneapolis
Sullivan, R. R.	Minneapolis
§*Sundt, Mathias	Minneapolis
Swanson, R. E.	Minneapolis
Swanson, V. F.	Minneapolis
§Sweetser, H. B., Jr.	Minneapolis
†Sweetser, H. B., Sr.	Minneapolis
§Sweetser, T. H.	Minneapolis
Sweitzer, S. E.	Minneapolis
§†Swendseen, C. G.	Minneapolis
§Tangen, G. M.	Minneapolis
Taylor, J. H.	Minneapolis
§Tenner, R. J.	Minneapolis
§Thomas, G. E.	Minneapolis
†Thomas, G. H.	Minneapolis
§Thompson, W. H.	Minneapolis
§Thysell, D. M.	Minneapolis
§Tingdale, A. C.	Minneapolis
Titrud, L. A.	Minneapolis
Todd, Romona L.	Minneapolis
§Trach, Benedict	Minneapolis
§Trow, J. E.	Minneapolis
‡Trow, W. H.	Minneapolis
Troxil, Elizabeth B.	Minneapolis
Trueman, H. S.	Minneapolis
§Tudor, R. B.	Minneapolis
§Tunstead, H. J.	Minneapolis
§Turnacliff, D. D.	Minneapolis
§Ude, W. H.	Minneapolis
Ulrich, H. L.	Minneapolis
§Undine, C. A.	Minneapolis
Vik, A. E.	Minneapolis
§Wahlquist, H. F.	Minneapolis
§Walch, A. E.	Minneapolis
§Waldron, C. W.	Minneapolis
§Wall, C. R.	Minneapolis
Walsh, F. M.	Minneapolis
Walsh, W. T.	Minneapolis
Wangensteen, O. H.	Minneapolis
Ward, P. A.	Minneapolis
§Watson, C. G.	Minneapolis
§Watson, C. J.	Minneapolis
Weaver, M. M.	Minneapolis
§Webb, E. A.	Minneapolis

§Webb, R. C............Minneapolis
Werner, George........Minneapolis
Werner, R. F..........Minneapolis
†West, Catharine C......Minneapolis
‡Westphal, K. F.........Minneapolis
§Wethall, A. G..........Minneapolis
Wetherby, Macnider.....Minneapolis
§Weum, T. W...........Minneapolis
White, A. A............Minneapolis
§White, S. M............Minneapolis
§White, W. D............Minneapolis
§Whitesell, L. A.........Minneapolis
§Widen, W. F...........Minneapolis
Wiechman, F. H. ......Minneapolis
Wilcox, A. E...........Minneapolis
§†Willcutt, C. E........Phoenix, Ariz.
‡Wildebush, F. F........Minneapolis
Wilder, K. W...........Minneapolis
§Wilder, R. L...........Minneapolis
Wilder, R. M., Jr......Minneapolis
§Wilken, P. A...........Minneapolis
†Williams, Robert........Carthage, Ill.
Winther, Nora M. C.....Minneapolis
‡Wipperman, F. F.......Minneapolis
§Witham, C. A..........Minneapolis
Wittich, F. W..........Minneapolis
Wolf, A. H............Minneapolis
*Wolf, W. W............Minneapolis
§Wohlrabe, A. A........Minneapolis
†Wright, C. D...........Minneapolis
§Wright, S. G...........Minneapolis
Wright, W. S...........Minneapolis
Wyatt, O. S............Minneapolis
Wynne, H. M. N.......Minneapolis
§Ylvisaker, R. S.........Minneapolis
§Yoerg, O. W...........Minneapolis
Zierold, A. A............Minneapolis
§Zinter, F. A............Minneapolis
Ziskin, Thomas.........Minneapolis

KANDIYOHI-SWIFT-MEEKER COUNTY MEDICAL SOCIETY

Regular meetings, second Wednesday of month
Annual meeting, November
Number of Members: 40

President
Lindley, S. B...............Willmar
Secretary
Wilmot, H. E.............Litchfield

Anderson, R. E............Willmar
Arnson, J. M...............Benson
Bosland, H. G..............Willmar
§Branton, B. J. ....Willmar
Daignault, Oscar............Benson
Danielson, K. A..........Litchfield
Danielson, Lennox.........Litchfield
Dille, D. E...............Litchfield
§Doswell, W. J. ....Kerkhoven
Eberley, T. S................Benson
Fisher, J. M................Willmar
Frederickson, Alice C........Willmar
Frederickson, G. U. Y.......Willmar
Frisch, F. P.................Willmar
§Frost, E. H.................Willmar
Giere, S. W..................Benson
Gilman, L. C.................Willmar
Hodapp, R. J................Willmar
§Jacobs, D. L................Willmar
§Jacobs, J. C. ....Willmar
Johnson, Hans...........Kerkhoven
Kaufman, E. J............Appleton
Lindley, S. B...............Willmar
Macklin, W. E..............Mankato
Mattson, Albert D..........Madison
Michels, R. P. ....Willmar
O'Connor, D. C.........Eden Valley
Penhall, F. W. ....Willmar
Peterson, Willard E.........Willmar
Porter, O. M................Willmar
Proeschel, R. K.............Willmar
Ripple, R. J...........New London
Rygh, Harold N..............Atwater
†Scofield, C. L................Benson
Sellers, G. K..................Dassel
Solsem, F. N.........Ah-Gwah-Ching
Telford, V. J...............Litchfield
Tyler, S. H.................Raymond
Wilmot, C. A...............Litchfield
Wilmot, H. E...............Litchfield

LYON-LINCOLN COUNTY MEDICAL SOCIETY

Regular meetings, first Tuesday of month
Annual meeting, last Tuesday in October
Number of Members: 26

President
Wolstan, S. D.............Minneota
Secretary
Workman, W. G...............Tracy

Akester, Ward..........Fergus Falls
Eckdale, J. E...............Marshall
Ferguson, W. C.......Walnut Grove
§Ford, B. C..................Marshall
Frank, J. E.................Marshall
Friedell, George.............Ivanhoe
Gray, F. D..................Marshall
Helferty, J. K...........Minneapolis
Hermanson, P. E........Hendricks
§Hoidale, A. D.................Tracy
Johnson, P. C..................Tyler
Kreuzer, T. C..............Marshall
Murphy, J. E..............Marshall
Patterson, R. B...........Marshall
Purves, G. H............Hendricks
Remsberg, R. R...............Tracy
†Robertson, J. B.........Minneapolis
†Sanderson, E. T. ....Alexandria
Sether, A. F.................Ruthton
Smith, L. A..................Balaton
Thompson, C. O..........Hendricks
Vadheim, A. L...................Tyler
Vadheim, L. A. ....Tyler
§Valentine, W. H...............Tracy
Wolstan, S. D.............Minneota
Workman, W. G...............Tracy
Yaeger, W. W.............Marshall

McLEOD COUNTY MEDICAL SOCIETY

Regular meetings, second or third Wednesday of month
Annual meeting, January
Number of Members: 19

President
Truesdale, C. W.............Glencoe
Secretary
Gridley, J. W. ....Glencoe

Brink, D. M............Hutchinson
Clement, J. B........Lester Prairie
Goss, H. C..................Glencoe
Goss, Martha D.............Glencoe
Gridley, J. W. ....Glencoe
Holm, H. H.................Glencoe
Jensen, A. M.............Brownton
Kallestad, L. L.........Hutchinson
§Klima, W. W................Stewart
Lippmann, E. W..........Hutchinson
McMahon, M. J.........Green Isle
Neumaier, Arthur...........Glencoe
Peterson, K. H..........Hutchinson
Rempel, D. D.........Lester Prairie
Sahr, W. G..............Hutchinson
Scholpp, O. W..........Hutchinson
Selmo, J. D.................Norwood
§Sheppard, C. G..........Hutchinson
Truesdale, C. W............Glencoe
Trutna, T. J............Silver Lake

MOWER COUNTY MEDICAL SOCIETY

Regular meeting, last Thursday of each month
Annual meeting, December
Number of Members: 27

President
Leck, P. C....................Austin
Secretary
Rosenthal, F. H. ....Austin

§*Allen, C. C..................Austin
§Allen, H. B..................Austin
§Anderson, D. P., Jr. ....Austin
§Barber, Tracy E..............Austin
§Cronwell, B. J...............Austin
Fisch, H. M..................Austin
§Flanagan, L. G...............Austin
§Grise, W. B..................Austin
§Havens, J. G. W.............Austin
Hegge, O. H.................Austin
§Hegge, R. S..................Austin
Henslin, A. E..............Le Roy
Henslin, M. E..............Le Roy
§Hertel, G. E.................Austin
§Leck, P. C...................Austin
§Lommen, P. A...............Austin
§McKenna, J. K................Austin
Melzer, G. R.....................Lyle
Morse, M. P..................Le Roy
§Robertson, P. A..............Austin
§Rosenthal, F. H.............Austin
Schneider, P. J...............Adams
§Schottler, G. J...............Dexter
§Sheedy, C. L..................Austin
Thomson, J. M. ....Minneapolis
§Wilson, F. C..................Austin
§Wright, R. R. ....Austin

NICOLLET-LE SUEUR COUNTY MEDICAL SOCIETY

Regular meetings, every four months
Annual meeting, December
Number of Members: 24

President
Johnson, H. O.............Mankato
Secretary
Wohlrabe, C. F.............Mankato

†Aitkens, H. B..............LeCenter
Covell, W. W...............St. Peter
§Curtis, R. A..............LeCenter
§Ericson, Swan............Le Sueur
Freeman, G. H.............St. Peter
§Giroux, A. A. ....North Mankato
§Grimes, B. P..............St. Peter
§Hiniker, P. J..............Le Sueur
Holtan, Theodore.........Waterville
§Johnson, H. C.......North Mankato
Kolars, J. J...............Faribault
Lanhoff, A. H.............St. Peter
§Larson, M. H...............Nicollet
§Lenander, M. E...........St. Peter
§Navratil, D. R.........Montgomery
§Nilson, H. J.........North Mankato
§Olmanson, E. G............St. Peter
§Olson, D. C.................Gaylord
§Sonnesyn, N. N............Le Sueur
§Sjostrom, L. E. ....St. Peter
§Strathern, C. S.............St. Peter
§Strathern, F. P.............St. Peter
§Traxler, J. F.............Henderson
§Wohrabe, C. F. ......North Mankato

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY MEDICAL SOCIETY

Regular meetings, first Wednesday every odd month
Annual meeting, November
Number of Members: 662

President

Gray, H. K.	Rochester

Secretary

Carryer, H. M.	Rochester

Abbott, K. H.	Rochester
§Adams, R. C.	Rochester
§Adson, A. W.	Rochester
§Ahlfs, J. J.	Caledonia
§Aldrich, C. A.	Rochester
§Allen, E. V.	Rochester
§Alvarez, W. C.	Rochester
Amberg, Samuel	Rochester
Ambrusko, J. S.	Rochester
Anderson, C. D.	Rochester
Anderson, M. E., Jr.	Rochester
§Anderson, M. J.	Rochester
§Anderson, M. W.	Rochester
*Anderson, N. E.	Harmony
§Anderson, R. E.	Rochester
Arling, P. A.	Rochester
‡Ashburn, F. S.	Rochester
§Ashley, W. F.	Rochester
§Askren, E. L., Jr.	Rochester
Babb, F. S.	Rochester
§Bacon, J. F.	Rochester
§Bailey, J. A.	Rochester
§Baggenstoss, A. H.	Rochester
§Bailey, J. A.	Rochester
§Bair, H. L.	Rochester
§Baker, G. S.	Rochester
Baker, H. R.	Hayfield
§Balfour, D. C.	Rochester
§‡Balfour, D. C., Jr.	Rochester
§Balfour, W. M.	Rochester
‡Banner, E. A.	Rochester
§Bargen, J. A.	Rochester
§Barger, J. D.	Rochester
§Barker, N. W.	Rochester
§Barnes, A. R.	Rochester
‡Barr, M. M.	Rochester
Bayrd, E. D.	Rochester
Beahrs, O. H.	Rochester
§Beare, J. B.	Rochester
‡Bearzy, H. J.	Rochester
§Belote, G. B.	Caledonia
§Benedict, W. L.	Rochester
‡Bennett, J. G.	Rochester
Bennett, J. K.	Phoenix, Ariz.
‡Bennett, W. A.	Rochester
§Berkman, D. M.	Rochester
§Berkman, D. S.	Rochester
§Berkman, J. M.	Rochester
§Bickel, W. H.	Rochester
§Bigelow, C. E.	Dodge Center
Biorn, C. L.	Rochester
Black, A. S., Jr.	Rochester
Black, B. M.	Rochester
Black, W. A.	Rochester
Blackburn, C. M.	Rochester
‡Blaisdell, J. S.	Rochester
§Boothby, W. M.	Rochester
§Bowing, H. H.	Rochester
Boylan, R. N.	Rochester
§Braasch, W. F.	Rochester
§Braastad, F. W.	Rochester
Bradley, W. F.	Rochester
Brandes, R. W.	Rochester
‡Breslow, Lester	Rochester
Briggs, Natalie M.	Wenatchee, Wash.
§Broders, A. C.	Rochester
Brooks, L. M.	Rochester
Brooksby, W. A.	Rochester
§Brown, A. E.	Rochester
§Brown, H. A.	Rochester
§Brown, H. S.	Rochester
Brown, M. H.	Rochester
§Brown, P. W.	Rochester
Browning, W. H.	Rochester
Brownson, B. C.	Rochester
§Brunsting, L. A.	Rochester
Bryan, A. L.	Rochester
§Buie, Louis A.	Rochester
§Burchell, H. B.	Rochester
Bush, R. P.	Rochester
§Butt, H. R.	Rochester
§Cain, J. C.	Rochester
Cameron, J. M.	Rochester
§Camp, J. D.	Rochester
§Campbell, D. C.	Rochester
Cariker, Mildred	Rochester
‡Carmona, M. G.	Rochester
§Carpenter, R. E.	Rochester
Carr, D. T.	Rochester
§Carryer H. M.	Rochester
Carter, J. W., Jr.	Rochester
Chapman, J. P., Jr.	Rochester
Chesley, G. L.	Rochester
Christensen, N. A.	Rochester
Ciaramelli, Letizia C.	Rochester
§Clagett, O. T.	Rochester
Clark, F. H.	Rochester
§Clark, L. W.	Spring Valley
‡Clarkson, W. R.	Rochester
§Clifton, T. A.	Chatfield
‡Cluxton, H. E., Jr.	Rochester
Collett, R. W.	Rochester
§Comfort, M. W.	Rochester
§Conley, F. W.	Rochester
Connery, D. B.	Rochester
§†Connor, H. M.	Rochester
§Cook, E. N.	Rochester
Cooper, Talbert	Rochester
§Corbin, K. B.	Rochester
Costin, M. E., Jr.	Rochester
§Counseller, V. S.	Rochester
§Coventry, M. B.	Rochester
Cox, W. B.	Rochester
*Cragg, R. W.	Rochester
§Craig, M. S., Jr.	Rochester
§Craig, W. McK.	Rochester
†Crewe, J. E.	Rochester
Cronkite, A. E.	Rochester
§Crowley, D. F., Jr.	Rochester
Cunningham, B. P.	Bridgeport, Conn.
Cunningham, E. S., Jr.	Rochester
Custer, M. D.	Rochester
‡Dahleen, H. C.	Rochester
§Dahlin, D. C.	Rochester
§Daniels, B. T.	Rochester
Darling, J. P.	Rochester
‡Daugherty, G. W.	Rochester
§Daut, R. V.	Rochester
‡Davies, L. T.	Rochester
§Davis, A. C.	Rochester
Davis, I. G.	Rushford
‡Davis, R. M.	Rochester
Day, Lois A.	Rochester
§Dearing, W. H., Jr.	Rochester
‡DeForest, R. E.	Rochester
Demong, C. V.	Rochester
§Desjardins, A. U.	Rochester
Deterling, R. A.	Rochester
Devine, K. D.	Rochester
DeVoe, R. W.	Rochester
Devney, J. W.	Rochester
DeWeerd, J. H.	Rochester
§Dickson, J. A., Jr.	Rochester
Diessner, G. R.	Rochester
Dille, R. S.	Rochester
§Dixon, C. F.	Rochester
§Dockerty, M. B.	Rochester
Doehring, P. C., Jr.	Boston, Mass.
Dolder, F. C.	Eyota
‡Donoghue, F. E.	Rochester
§Dornberger, G. R.	Rochester
Douglas, J. M.	Rochester
‡Douglass, B. E.	Rochester
†Drake, F. A.	Lanesboro
Drips, Della G.	Rochester
‡Drumheller, J. F.	Rochester
§Dry, T. J.	Rochester
DuMais, A. F.	Rochester
§Dunn, J. H.	Rochester
§Eaton, L. M.	Rochester
Edwards, J. E.	Rochester
Eckstam, E. E.	Rochester
Eger, Alban	Rochester
§Elkins, E. C.	Rochester
Ellliott, R. B.	Rochester
‡Ellis, F. H.	Rochester
Ellison, A. B. C.	Rochester
Emerson, G. F.	Rochester
§Emmett, J. L.	Rochester
§Erich, J. B.	Rochester
§Estes, J. E.	Rochester
§Eusterman, G. B.	Rochester
†Evarts, A. B.	Rochester
§Faber, J. E.	Rochester
Faber, W. M.	Rochester
Fair, E. E.	Rochester
§Farber, E. M.	Rochester
Faulconer, A., Jr.	Rochester
Fawcett, R. M.	Rochester
§Feldman, F. M.	Rochester
Ferguson, W. J., Jr.	Rochester
‡Ferguson, W. J.	Rochester
§Ferris, D. O.	Rochester
‡Ferris, H. A., Jr.	Rochester
§Figi, F. A.	Rochester
Fisher, R. L.	Rochester
§Fitzgibbons, R. J.	Rochester
§Flasher, Jack	Rochester
§Flashman, F. L.	Rochester
Fletcher, Mary E. H.	Rochester
Flickinger, F. M.	Lima, Ohio
§Flinn, J. H.	Rochester
‡Foerster, J. M.	Rochester
‡Fogarty, C. W., Jr.	Rochester
§Forney, R. A.	Rochester
Foss, E. L.	Rochester
‡Freeman, J. G.	Rochester
§Fricke, R. E.	Rochester
Fryfogle, J. D.	Rochester
§Gaarde, F. W.	Rochester
§Gaarde, F. W., Jr.	Rochester
§Gambill, E. E.	Rochester
Gastineau, C. F.	Rochester
Gentling, A. A.	Rochester
Gentry, R. W.	Rochester
§Ghormley, R. K.	Rochester
Gibson, R. H.	Rochester
‡Giffin, H. M.	Rochester
§Giffin, H. Z.	Rochester
Giffin, Mary E.	Rochester
§Glenn, W. V.	Rochester
Glover, R. P.	Rochester
‡Golden, P. B.	Rochester
Golden, R. F.	Rochester
§Good, C. A., Jr.	Rochester
Gordon, N. F.	Rochester
Gorsuch, M. T.	Rochester
§Graham, F. M.	Rochester
§Graham, R. B.	Rochester
Graham, R. J.	Rochester
Gramse, A. E.	Rochester
§Gray, H. K.	Rochester
Greene, L. F.	Rochester
Griess, D. F.	Rochester
Griffin, J. G.	Rochester
§Grindlay, J. H.	Rochester
§Groom, Dale	Rochester
Gross, J. B.	Rochester
§Grotting, J. K.	Rochester
‡Guernsey, D. E.	Minneapolis
§Habein, H. C.	Rochester
§Hagedorn, A. B.	Rochester
Haines, R. D.	Rochester
§Haines, S. F.	Rochester
§Hall, B. E.	Rochester
§Hallberg, O. E.	Rochester
§Hallenbeck, D. F.	Rochester
§Hallenbeck, G. A.	Rochester
Hamilton, D. F.	Rochester
‡Hamm, R. S.	Rochester
Hammes, E. M., Jr.	Rochester
‡Hanlon, G. H.	Rochester
Hansbro, G. L.	Rochester
Hanson, N. O.	Rochester
Hare, Helen J.	Rochester
§Hargraves, M. M.	Rochester
§Harrington, S. W.	Rochester
‡Hart, G. M.	Rochester
§Hartigan, J. D.	Rochester
§Hartman, H. R.	Rochester
Harvey, George, Jr.	Rochester
Hasskarl, W. F., Jr.	Rochester
Hatcher, A. C.	Rochester
§Havens, F. Z.	Rochester
§Haynes, Allan	Rochester
Headley, N. E.	Rochester
§Heck, F. J.	Rochester
§Heersema, P. H.	Rochester
Heilman, F. R.	Rochester
Heinrich, W. A.	Rochester
†Helland, G. M.	Spring Grove
§Helland, J. W.	Spring Grove
§Helmholz, H. F.	Rochester
§Hempstead, B. E.	Rochester
§Hench, P. S.	Rochester
§‡Henderson, E. D.	Rochester
§Henderson, J. W.	Rochester
‡Henderson, L. L.	Rochester
§Henderson, M. S.	Rochester
§Henegar, G. C.	Rochester
Henkel, H. B.	Rochester
§Herbst, R. F.	Wykoff
§Herrell, W. E.	Rochester
Hewitt, Edith S.	Rochester
†Hewitt, R. M.	Rochester
†Heyerdale, O. C.	Rochester
Heyerman, O. T.	Rochester
Higgins, R. S.	Rochester
Higginson, J. F.	Rochester
Hightower, N. C., Jr.	Rochester
§Hill, J. R.	Rochester
§Hilton, H. D.	Rochester
§Hines, E. A., Jr.	Rochester
§Hinshaw, H. C.	Rochester
§Hodgson, C. H.	Rochester
Hodgson, J. R.	Rochester
Hollenhorst, R. W.	Rochester
§Holmes, C. L.	Rochester
§Holt, R. P.	Rochester
§Hoon, J. R.	Rochester
§Hoppes, E. E.	Rochester
§Horan, M. J.	Rochester
§Horton, B. T.	Rochester

Hosfeld, S. Marjorie........Rochester
§Howell, L. P.................Rochester
Hughes, T. J....................Rochester
§Hunt, A. B......................Rochester
Hunt, V. W.........................Rochester
‡Hurley, J. P......................Rochester
Hutchins, S. P. R...........Rochester
Irmisch, G. W....................Rochester
Irons, W. E........................Rochester
‡Iverson, H. A....................Rochester
Ivins, J. C.........................Rochester
§Jackman, R. J....................Rochester
§Jackson, H. S....................Rochester
Janes, J. M.........................Rochester
‡Jennings, D. T....................Rochester
Johns, Sylvia.......................Rochester
§Johnson, B. H., Jr............Rochester
‡Johnson, C. C....................Rochester
§Johnson, C. R....................Rochester
Johnson, M. A.....................Rochester
Johnson, R. B.....................Lanesboro
Jondahl, W. H.....................Rochester
§Jones, R. H., Jr..................Rochester
§Joss, C. S..........................Rochester
§Judd, E. S., Jr....................Rochester
Karstens, H. C....................Rochester
§Keating, F. R., Jr..............Rochester
§Keating, J. U.....................Rochester
Keeley, J. K........................Rochester
Keffer, W. H........................Rochester
§Keith, H. M.........................Rochester
§Keith, N. M..........................Rochester
Kelsey, M. P.........................Rochester
Kemper, C. M.......................Rochester
§Kennedy, R. L. J...............Rochester
Kennedy, T. J.......................Rochester
§Kepler, E. J........................Rochester
Kern, C. E............................Rochester
§Kernohan, J. W...................Rochester
§Kierland, R. R....................Rochester
§Kiernan, P. C......................Rochester
§Kirby, J. L...........................Rochester
Kirkland, W. G......................Rochester
§Kirklin, B. R........................Rochester
§Kirklin, O. L........................Rochester
Klontz, C. E., Jr...................Rochester
‡Knisely, R. M......................Rochester
‡Knutson, J. R. B..................Rochester
§Knutson, L. A..........Spring Grove
§Koelsche, G. A....................Rochester
Kreilkamp, B. L.....................Rochester
§Krusen, F. H........................Rochester
Kurzweg, F. T........................Rochester
§Kvale, W. F..........................Rochester
§Lake, C. F............................Rochester
§Lampert, E. G......................Rochester
Lander, H. H..........................Rochester
Landry, R. M..........................Rochester
§Lannin, J. C...............................Mabel
Large, H. R............................Rochester
Larrabee, W. F., Jr...............Rochester
§Latterell, K. E......................Rochester
§Leary, W. V...........................Rochester
Leavitt, M. D..........................Rochester
LeBlanc, L. J..........................Rochester
§Leddy, E. T...........................Rochester
§Lee, J. B...............................Rochester
‡Lemon, W. E.........................Rochester
§Lemon, W. S.........................Rochester
Levin, Louis............................Rochester
Lightfoot, Grace K.................Rochester
§Lillie, H. I...............................Rochester
§Lillie, J. C..............................Rochester
§Lipscomb, P. R......................Rochester
*†Lochead, D. C......................Rochester
Lofgren, K. A..........................Rochester
§Logan, A. H...........................Rochester
§Logan, G. B...........................Rochester
Lombardi, A. A.......................Rochester
Long, Mary.............................Rochester
Loose, W. D............................Rochester
§Love, J. G..............................Rochester
§Lovelady, S. B.......................Rochester
§Lovshin, L. L..........................Rochester
§Lowe, G. H.............................Rochester
§Loyd, E. L...............................Rochester
§Ludden, T. E..........................Rochester
Luellen, T. J............................Rochester
§Lundy, J. S............................Rochester
§Lyman, R. W..........................Rochester
Lynch, J. L...............................Rochester
Lynch, R. C..........New Orleans, La.
§MacCarty, C. S......................Rochester
§†MacCarty, W. C...................Rochester
§Macdonald, I. D.....................Rochester
§MacLean, A. R.......................Rochester
‡MacMurtrie, W. J., Jr............
Bethesda, Md.
Macy, Dorothy........................Rochester
§Magath, T. B..........................Rochester
§†Mann, F. C...........................Rochester
§Marek, F. H...........................Rochester
Margulies, Harold....................Rochester
Marr, G. E................................Rochester

Martens, T. G..........................Rochester
Marvin, C. P............................Rochester
§Masson, D. M.........................Rochester
§Masson, J. C..........................Rochester
§Mayfield, L. H.........................Rochester
§Mayo, C. W............................Rochester
§Maytum, C. K.........................Rochester
McAnally, A. K.........................Rochester
§McBean, J. B..........................Rochester
McClellan, J. T........................Rochester
§McConahey, W. M., Jr...........Rochester
McCreight, W. G......................Rochester
§McDonald, J. R......................Rochester
§McElin, T. W..........................Rochester
McEachern, C. G.....................Rochester
§McGuff, P. E..........................Rochester
McKaig, C. B.......................Pine Island
McLaughlin, B. H......................Rochester
§McMahon, J. M......................Rochester
McMillan, J. T..........................Rochester
§McQuarrie, H. B.....................Rochester
McVicker, J. H.........................Rochester
‡Meadows, J. A.......................Rochester
§Merritt, W. A..........................Rochester
Messler, J. D...........................Rochester
§Meyer, A. C...........................Rochester
Meyer, W. M...........................Rochester
Meyerding, H. W.....................Rochester
Meyers, W. C..........................Rochester
Mezen, J. F.............................Rochester
Millen, F. J...............................Rochester
‡Miller, Sidney.........................Rochester
§Moersch, F. P.........................Rochester
§Moersch, H. J.........................Rochester
Montgomery, G. E....................Rochester
§Montgomery, Hamilton..........Rochester
Morgan, E. H...........................Rochester
Morgan, J. L............................Rochester
§Morlock, C. G.........................Rochester
§Morris, D. S............................Rochester
Morrow, J. R............................Rochester
Morton, R. J.............................Rochester
Mulmed, E. I............................Rochester
‡Murphy, J. T...........................Rochester
Murphy, M. E...........................Rochester
‡Murray, R. A...........................Rochester
Musgrove, J. E........................Rochester
Mussey, Mary E.......................Rochester
§Mussey, R. D..........................Rochester
Mussey, R. D., Jr.....................Rochester
§Myers, T. T.............................Rochester
‡Nay, R. M...............................Rochester
§Nehring, J. P..............................Preston
Neibling, H. A..........................Rochester
§New, G. B...............................Rochester
§Nichols, D. R..........................Rochester
‡Nickeson, R. W......................Rochester
Nielsen, W. L...........................Rochester
Nix, J. T...................................Rochester
Nixon, R. R..............................Rochester
Nordland, M. A........................Rochester
Norley, Theodore.....................Rochester
Norris, N. T.............................Caledonia
Norval, M. A............................Rochester
O'Brien, R. W..........................Rochester
§Odel, H. M..............................Rochester
Olcott, E. D..............................Rochester
§O'Leary, P. A..........................Rochester
§Olsen, A. M.............................Rochester
§Olson, E. A.........................Pine Island
§Olson, G. E.....................West Concord
Olson, O. C..............................Rochester
Olson, S. W..............................Rochester
O'Neal, Ruth.............................Rochester
Onsgard, L. K...............................Houston
‡Osborn, J. E............................Rochester
Owen, A. C...............................Rochester
§Paalman, R. J.........................Rochester
Palmer, J. K.............................Rochester
Parke, F. F...............................Rochester
§Parker, H. L............................Rochester
§Parker, R. L............................Rochester
Parkhill, Edith M.......................Rochester
Parkin, T. W.............................Rochester
Paschall, Jack, Jr....................Rochester
Paulson, J. A............................Rochester
Pearson, C. C...........................Rochester
Pearson, D. J. ..Battle Creek, Mich.
Pease, Gertrude L....................Rochester
§Peltzer, W. E...........................Rochester
§Pemberton, J. deJ...................Rochester
§Pender, J. W...........................Rochester
Perkins, R. F............................Rochester
§Perry, E. L..............................Rochester
‡Peters, G. A............................Rochester
§Petersen, M. C........................Rochester
§Peterson, J. R.........................Rochester
Pfuetze, M. E...........................Rochester
Phillips, S. K............................Rochester
§Pierce, P. P............................Rochester
§Piper, M. C.............................Rochester
§Plummer, W. A........................Rochester
§Polley, H. F.............................Rochester
§*Pollock, L. W.........................Rochester

§Pool, T. L..................................Rochester
§Poore, T. N...............................Rochester
§Popp, W. C................................Rochester
§Powers, F. H.............................Rochester
§Prangen, A. D...........................Rochester
§Pratt, J. H..................................Rochester
Pratt, W. C.................................Rochester
Preston, F. W.............................Rochester
‡Preston, L. F.............................Rochester
§Prickman, L. E..........................Rochester
§Priestley, J. T...........................Rochester
§Pruitt, R. D...............................Rochester
§Pugh, D. G................................Rochester
Pugh, P. F. H.............................Rochester
Pyle, Marjorie M.........................Rochester
§Ralston, D. E............................Rochester
Ramsey W. H. II.........................Rochester
§Randall, L. M............................Rochester
Rang, R. H.................................Rochester
§Rasmussen, W. C.....................Rochester
Remington, J. H.........................Rochester
Rice, Roberta G.........................Rochester
§Risser, A. F.........................Stewartville
§Rivers, A. B..............................Rochester
§*Robertson, H. E.......................Rochester
Robson, J. T...............................Rochester
Rogers, J. D..............................Rochester
§Rogne, W. G.....................Spring Grove
Rosenbaum, E. E.......................Rochester
Rosenow, E. C.........Cincinnati, Ohio
Rosenow, J. H...........................Rochester
Rovelstad, R. A.........................Rochester
§Rucker, C. W...........................Rochester
Ruff, C. C..................................Rochester
Rulison, E. T., Jr.......................Rochester
‡Rushton, J. G..........................Rochester
§Russ, F. H...............................Rochester
Ryan, R. E................................Rochester
§Rynearson, E. H......................Rochester
Salassa, R. M...........................Rochester
§Sanford, A. H..........................Rochester
Sauer, W. G..............................Rochester
§Sayre, G. P.............................Rochester
Scales, J. R...............Kingsville, Tex.
Scanlon, R. L............................Rochester
Schafer, L. A.............................Rochester
Scheifley, C. H...........................Rochester
Schmidt, E. C.............................Rochester
§Schmidt, H. W..........................Rochester
‡Schmitt, G. F............................Rochester
‡Scholten, R. A..........................Rochester
Seebach, Lydia M......................Rochester
Seiler, H. H................................Rochester
§Seldon, T. H.............................Rochester
‡Sengpiel, G. W.........................Rochester
§Seybold, W. D..........................Rochester
§Shellito, J. G.............................Rochester
Sheridan, Viola E......................Rochester
§Shick, R. M..............................Rochester
‡Shonyo, E. S............................Rochester
Short, C. A., Jr..........................Rochester
Shullenberger, C. C..................Rochester
Sicher, W. D..............................Rochester
§Simonton, K. M........................Rochester
‡Skillern, P. G., Jr......................Rochester
Skroch, E. E...............................Rochester
Slaughter, O. L..........................Rochester
§Slocumb, C. H..........................Rochester
Smith, F. H.................................Rochester
§Smith, F. L................................Rochester
§Smith, F. R................................Rochester
§Smith, H. L................................Rochester
§Smith, L. A................................Rochester
§Smith, N. D................................Rochester
§Smith, O. O., Jr.........................Rochester
Smith, R. S.................................Rochester
§Snell, A. M................................Rochester
Snider, G. G...............................Rochester
Spar, A. A..................................Rochester
§Sprague, R. G..........................Rochester
‡Spray, Paul...............................Rochester
§Stark, D. B................................Rochester
‡Stark, F. M................................Rochester
‡Starks, W. O..............................Rochester
Stein, B. R..................................Rochester
§Stevens, J. E., Jr.......................Rochester
§Stickney, J. M...........................Rochester
§Stilwell, G. G.............................Rochester
Stokes, G. D...............................Rochester
Stout, H. A..................................Rochester
Stover, Lee.................................Rochester
§Stroebel, C. F., Jr......................Rochester
§Strong, M. L..............................Rochester
Stuart, R. L.................................Rochester
†Sutherland, C. G........................Rochester
§Svien, H. J.................................Rochester
‡Taylor, J. C................................Rochester
Thomas, J. F...............................Rochester
§Thompson, G. J.........................Rochester
Thorson, S. B..............................Rochester
Tice, G. I.....................................Rochester
‡Tice, W. A..................................Rochester
§Tillisch, J. H...............................Rochester
Tomlin, H. M................................Rochester

Tompkins, S. F.	Rochester
Tosseland, N. E.	Rochester
§Tuohy, E. B.	Rochester
Turner, J. L.	Rochester
Uhrich, E. C.	Rochester
§Uihlein, Alfred	Rochester
§Underdahl, L. O.	Rochester
Upshaw, Bette Y.	Rochester
‡Urban, D. A.	Rochester
§Van Cleve, H. P., Jr.	Rochester
Van Herik, Martin	Rochester
Varney, J. H.	Rochester
§Vaughan, L. M.	Rochester
§Vaughn, L. D.	Rochester
Vigran, Myron	Rochester
§Wagener, H. P.	Rochester
§Wakefield, E. G.	Rochester
Walsh, A. C.	Rochester
§Walsh, M. N.	Rochester
§Walters, Waltman	Rochester
‡Ward, B. H.	Rochester
Warren,, W. B.	Rochester
Washko, P. J.	Rochester
§Watkins, C. H.	Rochester
Watkins, D. H.	Rochester
§Waugh, J. M.	Rochester
Webb, Margaret A.	Rochester
§Weber, H. M.	Rochester
§Weed, L. A.	Rochester
§Weir, J. F.	Rochester
Weisman, S. J.	Rochester
Weismann, R. E.	Rochester
§Wellner, T. O.	Rochester
Wells, G. R.	Rochester
§Wells, J. J.	Rochester
§Westrup, J. E.	Rochester
White, E. F., Jr.	Rochester
White, N. K.	Rochester
Whitehouse, F. R.	Rochester
Whitesell, F. B.	Rochester
§Wilder, R. M.	Rochester
§Williams, H. L., Jr.	Rochester
§Williams, R. R., Jr.	Rochester
Williams, R. V.	Rushford
§Willius, F. A.	Rochester
§Wilmer, H. A.	Rochester
Wilson, G. T.	Rochester
Wilson, J. M.	Rochester
Wilson, J. W.	Rochester
§Wilson, R. V.	Rochester
§Winchester, W. W.	Rochester
§Wise, R. W. E.	Rochester
Wold, L. E.	Rochester
§Wollaeger, E. E.	Rochester
§Woltman, H. W.	Rochester
§Wood, H. G.	Rochester
‡Wood, W. D.	Rochester
Woodruff, C. W.	Chatfield
Wozencraft, J. P.	Rochester
§Young, H. H.	Rochester
Zaslow, Jerry	Rochester

PARK REGION DISTRICT AND COUNTY MEDICAL SOCIETY

Douglas, Grant, Otter Tail and Wilkin Counties
Regular meetings quarterly
Annual meeting, December
Number of Members: 58

President

Sather, E. R.	Alexandria

Secretary

Baker, C. E.	Herman

§Arndt, H. W.	Detroit Lakes
§Baker, A. C.	Fergus Falls
Baker, C. E.	Herman
§Baker, N. H.	Fergus Falls
Baker, Jeannette L.	Fergus Falls
Bergquist, K. E.	Battle Lake
Bigler, I. E.	Perham
§Blakey, A. R.	Osakis
§Boline, C. A.	Battle Lake
§Boyd, L. M.	Alexandria
§Burnap, W. L.	Fergus Falls
Cain, J. H.	Hoffman
Carlson, C. E.	Alexandria
Clifford, G. W.	Alexandria
§Combacker, L. C.	Fergus Falls
§Drought, W. W.	Fergus Falls
Esser, John	Perham
§Estrem, C. O.	Fergus Falls
§Estrem, R. D.	Fergus Falls
Hanson, E. C.	New York Mills
§Haskell, A. D.	Alexandria
§Heiberg, E. A.	Fergus Falls
§Helseth, H. K.	Fergus Falls
Jacobs, G. C.	Fergus Falls
§Jacobson, C. W.	Breckenridge
Johnson, O. V.	Fergus Falls
§Kierland, P. E.	Alexandria
Leibold, H. H.	Parkers Prairie
§Lewis, A. J.	Henning
Love, F. A.	Carlos
§Lund, C. J. T.	Fergus Falls
Miller, W. A.	New York Mills
§Mouritsen, G. J.	Fergus Falls
§Naegeli, F. A.	Fergus Falls
Nelson, R. A.	Fergus Falls
§Nelson, W. O. B.	Fergus Falls
O'Brien, Louis T.	Breckenridge
Ostergaard, Erling	Fergus Falls
Parson, Lillian B.	Elbow Lake
Parson, L. R.	Elbow Lake
Patterson, W. L.	Fergus Falls
§Paulson, E. C.	Elbow Lake
Paulson, G. S.	Evansville
Paulson, T. S.	Fergus Falls
Randall, A. M.	Ashby
Reeve, E. T.	Elbow Lake
§Satersmoen, Theodore	Pelican Rapids
§Sather, E. R.	Alexandria
§Schamber, W. F.	Parkers Prairie
§Schleinitz, F. B.	Battle Lake
§Serkland, J. C.	Rothsay
§Stemsrud, H. L.	Alexandria
Sutton, H. R.	Hoffman
§Tanquist, E. J.	Alexandria
§Thompson, H. B.	Fergus Falls
Warner, J. J.	Perham
§Wasson, L. F.	Alexandria
Wray, W. E.	Campbell

RAMSEY COUNTY MEDICAL SOCIETY

Regular meetings, last Monday in every month excepting June, July, August
Annual meeting, last Monday in January
Number of Members: 407

President

Culligan, J. M.	St. Paul

Secretary

Hilger, L. D.	St. Paul

Adair, A. F., Jr.	St. Paul
Adler, B. C.	St. Paul
§Ahrens, A. E.	St. Paul
§Ahrens, A. H.	St. Paul
Alden, J. F.	St. Paul
*†Alexander, F. H.	St. Paul
§Arnquist, A. S.	St. Paul
§Arny, F. P.	St. Paul
§Arzt, P. K.	St. Paul
§Aurelius, J. R.	St. Paul
§Ausman, C. F.	St. Paul
§Bacon, D. K.	St. Paul
§†Bacon, L. C.	St. Paul
§Balcome, M. M.	St. Paul
Barnett, J. M.	St. Paul
Barsness, Nellie O. N.	St. Paul
§Barry, L. W.	St. Paul
Barton, John C.	St. Paul
§†Beals, Hugh	St. Paul
§Beech, R. H.	St. Paul
§Beek, H. O.	St. Paul
Beer, J. J.	St. Paul
§Bell, C. C.	St. Paul
Benepe, J. L.	St. Paul
Bennion, P. H.	St. Paul
§Bentley, N. P.	St. Paul
Bernstein, W. C.	St. Paul
§Bicek, J. F.	St. Paul
Binger, H. E.	St. Paul
Black, E. J.	St. Paul
§Bock, R. A.	St. Paul
Boeckmann, Egil	St. Paul
§Bolender, H. L.	St. Paul
Borg, J. F.	St. Paul
§Bouma, L. R.	St. Paul
§Brand, G. D.	St. Paul
Bray, E. R.	St. Paul
§Briggs, J. F.	St. Paul
§Broadie, T. E.	St. Paul
§Brodie, W. D.	St. Paul
Brown, J. C.	St. Paul
Bulinski, T. J.	St. Paul
§Burch, E. P.	St. Paul
§Burch, F. E.	St. Paul
Burlingame, David A.	St. Paul
§Burns, R. M.	St. Paul
Burton, C. G.	St. Paul
§Busher, H. H.	St. Paul
§Cain, C. L.	St. Paul
Callahan, F. F.	St. Paul
§Carley, W. A.	St. Paul
§Carroll, W. C.	St. Paul
§Chadbourn, C. R.	St. Paul
§Chatterton, C. C.	St. Paul
§Christiansen, A.	St. Paul
*†Christison, J. T.	St. Paul
§Clark, H. B., Jr.	St. Paul
Cochrane, B. B.	St. Paul
Coddon, W. D.	St. Paul
§Colby, W. L.	St. Paul
§Cole, W. H.	St. Paul
†Collie, H. G.	St. Paul
Colvin, A. R.	St. Paul
Connolly, C. J.	St. Paul
§Connor, C. E.	St. Paul
§Cook, C. K.	St. Paul
§Cooper, C. C.	St. Paul
§Countryman, R. S.	St. Paul
†Cowern, E. W.	No. St. Paul
§Critchfield, L. R.	St. Paul
Crombie, F. J.	No. St. Paul
Crump, J. W.	St. Paul
§Culligan, J. M.	St. Paul
§Culver, L. G.	St. Paul
§Dack, L. G.	St. Paul
†Daugherty, E. B.	Marine-on-St. Croix
§Davis, E. V.	St. Paul
Davis, William	St. Paul
Decker, C. H.	St. Paul
§*DeCourcy, D. M.	St. Paul
§Dedolph, Karl	St. Paul
§Derauf, B. I.	St. Paul
Deters, D. C.	St. Paul
§Dickson, T. H.	St. Paul
§*Dittman, G. C.	St. Paul
Donohue, P. F.	St. Paul
Dovre, C. M.	St. Paul
§Drake, C. B.	St. Paul
§Dunn, J. N.	St. Paul
§Earl, G. A.	St. Paul
§Earl, J. R.	St. Paul
Earl, Robert	St. Paul
§Edlund, Gustaf	St. Paul
Edwards, J. W.	St. Paul
§Edwards, T. J.	St. Paul
Eginton, C. T.	St. Paul
Ely, O. S.	So. St. Paul
§Emerson, E. C.	St. Paul
§Endress, E. K.	St. Paul
Enroth, O. E.	St. Paul
Ernest, G. C. H.	So. St. Paul
Ersfeld, Murray P.	St. Paul
†Eshelby, E. C.	St. Paul
Evert, John A.	St. Paul
†Fahey, E. W.	St. Paul
§Ferguson, J. C.	St. Paul
§Fessler, H. H.	St. Paul
Fink, D. L.	St. Paul
Fisher, Isadore	St. Paul
§Flanagan, H. F.	St. Paul
Flink, E. B.	St. Paul
§Fogarty, C. W.	St. Paul
§Fogelberg, E. J.	St. Paul
§Foley, F. E. B.	St. Paul
Freeman, C. D.	St. Paul
Freidman, L. L.	St. Paul
Fritz, W. L.	St. Paul
§Froats, C. W.	St. Paul
Frost, Russell H.	St. Paul
§Garbrecht, A. W.	St. Paul
Gardiner, D. G.	St. Paul
§Gardner, W. P.	St. Paul
Garrow, D. M.	St. Paul
Garthe, J. J.	St. Paul
§Geer, E. K.	St. Paul
§Gehlen, J. N.	St. Paul
§Geist, G. A.	St. Paul
§Ghent, Harry	St. Paul
Gibbs, E. C.	St. Paul
Gilfillan, J. S.	St. Paul
Gilkey, S. E.	St. Paul
Gillespie, D. R.	St. Paul
†Ginsberg, William	St. Paul
§Gjerde, W. P.	St. Paul
Gleason, W. A.	St. Paul
§†Goltz, E. V.	St. Paul

Grant, H. W.	St. Paul
§Gratzek, Thomas	St. Paul
§Grau, R. K.	St. Paul
§Gruenhagen, A. P.	St. Paul
Gullingsrud, M. J. O.	Oregon
†Hall, A. R.	St. Paul
Hall, H. H.	St. Paul
§Hammes, E. M.	St. Paul
Hammond, J. F.	St. Paul
§Hanson, H. B.	St. Paul
§Harmon, G. E.	St. Paul
§Hartfiel, W. F.	St. Paul
Hartig, Marjorie	St. Paul
§Hartley, E. C.	St. Paul
§Hassett, M. F.	St. Paul
§Hauser, V. P.	St. Paul
§Hayes, A. F.	St. Paul
§Heck, W. W.	St. Paul
Hedenstrom, F. G.	St. Paul
Henderson, A. J. G.	St. Paul
Hengstler, W. H.	St. Paul
§Hensel, C. N.	St. Paul
Herman, S. M.	St. Paul
§Heron, R. C.	St. Paul
§Herrmann, E. T.	St. Paul
Hertz, M. J.	St. Paul
§Hilger, A. W.	St. Paul
†Hilger, D. D.	St. Paul
§Hilger, J. A.	St. Paul
§Hilger, L. D.	St. Paul
§Hilger, L. A.	St. Paul
Hiniker, L. P.	St. Paul
§Hochfilzer, J. J.	St. Paul
§Hoff, Alfred	St. Paul
Holcomb, O. W.	St. Paul
Hollinshead, W. H.	St. Paul
§Holmen, R. W.	St. Paul
§Holt, J. E.	St. Paul
Hopkins, G. W.	St. Paul
Howard, M. A.	St. Paul
Howard, W. S.	St. Paul
§Hullsiek, H. E.	St. Paul
§Hullsiek, R. B.	St. Paul
Hultgen, W. J.	St. Paul
Hurwitz, M. M.	St. Paul
§Ide, A. W.	St. Paul
Ikeda, Kano	St. Paul
Ingerson, C. A.	St. Paul
Janssen, M. E.	St. Paul
Jesion, J. W.	St. Paul
§Johanson, W. G.	St. Paul
§Johnson, A. M.	St. Paul
Johnson, C. E.	St. Paul
Johnson, J. A.	St. Paul
Jones, E. M.	St. Paul
§Kamman, G. R.	St. Paul
Kaplan, D. H.	St. Paul
Karon, I. M.	St. Paul
§Kasper, E. M.	St. Paul
Katzovitz, Hyman	St. Paul
Keefe, R. E.	St. Paul
§Kelly, J. V.	St. Paul
Kelly, P. H.	St. Paul
Kelsey, C. M.	St. Paul
Kendall, R. F.	St. Paul
§Kenefick, E. V.	St. Paul
§Kennedy, W. A.	St. Paul
Kenyon, T. J.	St. Paul
§Kesting, Herman	St. Paul
King, G. L.	St. Paul
Kleifgen, G. V. H.	St. Paul
§Klein, H. N.	St. Paul
§†Knauff, M. K.	St. Paul
Knutson, G. E.	St. Paul
§Kugler, A. A.	St. Paul
Kuske, A. W.	St. Paul
Kvitrud, Gilbert	St. Paul
§Lannin, B. G.	St. Paul
§Larsen, C. L.	St. Paul
Larson, Eva-Jane	St. Paul
Larson, J. T.	St. Paul
Lauer, D. J.	Pittsburgh, Pa.
Lax, M. H.	St. Paul
§Leahy, Bartholomew	St. Paul
§Leavenworth, R. O.	St. Paul
Leick, R. M.	St. Paul
§Leitch, Archibald	St. Paul
§Lepak, J. A.	St. Paul
†Lerche, William	Cable, Wis.
§Leven, N. L.	St. Paul
Leverenz, C. W.	St. Paul
Levin, Bert	St. Paul
Levitt, G. X.	St. Paul
§Lick, C. L.	St. Paul
Lien, R. J.	St. Paul
§Lightbourn, E. L.	St. Paul
§Lilleberg, N. J.	St. Paul
Lippman, H. S.	St. Paul
*†Little, W. J.	St. Paul
§Loken, S. M.	St. Paul
Lowe, E. R.	So. St. Paul
Lowe, T. A.	So. St. Paul
§Lundholm, A. M.	St. Paul
§Lynch, F. W.	St. Paul
McAdams, J. B.	St. Paul
McCain, D. L.	St. Paul
McCarthy, J. J.	St. Paul
McCarthy, W. R.	St. Paul
McClanahan, J. H.	White Bear
McClanahan, T. S.	White Bear
McCloud, C. N.	St. Paul
§McEwan, Alexander	St. Paul
†McLaren, Jennette M.	Minneapolis
§Madden, J. F.	St. Paul
§Madland, Robert S.	St. Paul
Maertz, W. F.	St. Paul
Malerich, J. A.	St. Paul
Marks, R. W.	St. Paul
Martin, D. L.	St. Paul
§Martineau, J. L.	St. Paul
§Meade, J. R.	St. Paul
§Mears, B. J.	St. Paul
§Medelman, J. P.	St. Paul
Melancon, J. F.	St. Paul
§Meyerding, E. A.	St. Paul
§Moga, J. A.	St. Paul
Molander, H. A.	St. Paul
Moquin, Marie A.	St. Paul
Moriarty, Berenice	St. Paul
Moriarty, Cecile R.	St. Paul
Muller, A. E.	St. Paul
§Muller, R. T.	St. Paul
Naegeli, A. E.	St. Paul
§Nash, L. A.	St. Paul
§Nelson, L. A.	St. Paul
§Nichols, A. E.	St. Paul
§Noble, J. F.	St. Paul
§Noble, J. L.	St. Paul
Nuebel, C. J.	St. Paul
Nye, Katherine A.	St. Paul
Nye, Lillian L.	St. Paul
O'Brien, W. M.	St. Paul
O'Connor, L. J.	St. Paul
Oerting, Harry	St. Paul
§Ogden, Warner	St. Paul
§Ohage, Justus Jr.	St. Paul
O'Kane, T. W.	St. Paul
Olsen, R. L.	St. Paul
Olson, C. A.	St. Paul
§O'Reilley, B. E.	St. Paul
§Ostergren, E. W.	St. Paul
§Ouellette, A. J.	St. Paul
§Pearson, F. R.	St. Paul
Pearson, M. M.	St. Paul
Pedersen, A. H.	St. Paul
§Perry, C. G.	St. Paul
Peterson, D. B.	St. Paul
§Peterson, H. O.	St. Paul
§Peterson, J. L. E.	St. Paul
§Plondke, F. J.	St. Paul
§Prendergast, H. J.	St. Paul
Quattlebaum, F. W.	St Paul
Radabaugh, R. C.	Hastings
Ralph, J. R.	St. Paul
†Ramsey, W. R.	St. Paul
Rasmussen, R. C.	St. Paul
Rea, C. E.	St. Paul
§Richards, E. T. F.	St. Paul
§Richardson, H. E.	St. Paul
Richardson, R. J.	St. Paul
Rick, P. F. W.	St. Paul
§Ritchie, W. P.	St. Paul
§Ritt, A. E.	St. Paul
§Rogers, S. F.	St. Paul
Rolig, D. H.	St. Paul
§Rosenbladt, Louis	Tacoma, Wash.
Rosenholtz, Burton	St. Paul
§Rosenthal, Robert	St. Paul
§Roth, G. C.	St. Paul
Rothschild, H. J.	St. Paul
§Roy, P. C.	St. Paul
§†Ruhberg, G. N.	St. Paul
Ruona, Martin A.	St. Paul
Rutherford, W. C.	Nisswa
Ryan, James D.	St. Paul
§Ryan, J. J.	St. Paul
§Ryan, J. M.	St. Paul
§Ryan, M. E.	St. Paul
§Sarnecki, M. M.	St. Paul
Satterlund, V. L.	St. Paul
§Savage, F. J.	St. Paul
Schmidtke, R. L.	St. Paul
Schoch, R. B. J.	St. Paul
§Schons, Edward	St. Paul
Schroeckenstein, H.F.	St. Paul
§†Schuldt, F. C.	St. Paul
§Schulze, A. G.	St. Paul
§Schwyzer, H. C.	St. Paul
§Scott, E. E.	St. Paul
Selvig, H. S.	St. Paul
†Senkler, G. E.	St. Paul
§Setzer, H. J.	St. Paul
Shannon, W. R.	St. Paul
†Shellman, J. L.	Pacific Palisades, Cal.
§Shimonek, S. W.	St. Paul
Short, Jacob	St. Paul
Siegel, Clarence	St. Paul
§Simons, L. T.	St. Paul
Singer, B. J.	St. Paul
§†Skinner, H. O.	St. Paul
§Smisek, E. A.	St. Paul
§Smith, V. D. E.	St. Paul
§Snyder, G. W.	St. Paul
§Sohlberg, O. I.	St. Paul
§Sommers, Ben	St. Paul
§Sorem, M. B.	St. Paul
§Souster, B. B.	St. Paul
§Sprafka, J. M.	St. Paul
§Steinberg, C. L.	St. Paul
§Sterner, E. G.	St. Paul
§Sterner, E. R.	St. Paul
§Sterner, O. W.	St. Paul
Stewart, Alexander	St. Paul
§*Stinnette, S. E.	St. Paul
§Stolpestad, A. H.	St. Paul
§Stolpestad, H. L.	St. Paul
§Strate, G. E.	St. Paul
Straus, M. L.	St. Paul
Strem, E. L.	St. Paul
Sturley, Rodney F.	St. Paul
Swanson, J. A.	St. Paul
§Swendson, J. J.	St. Paul
§Teisberg, C. B.	St. Paul
Teisberg, J. E.	St. Paul
Thompson, F. A.	St. Paul
Thoreson, M. C. Bernice	So. St. Paul
Tifft, C. R.	St. Paul
Tracht, R. R.	St. Paul
Travis, J. S.	St. Paul
§Tregilgas, H. R.	So. St. Paul
Varco, R. L.	St. Paul
Veirs, Dean	St. Paul
Veirs, Ruby J. S.	St. Paul
§Venables, A. E.	St. Paul
§Von der Weyer, W. H.	St. Paul
§Waas, C. W.	St. Paul
§Walker, A. E.	St. Paul
§Walter, C. W.	St. Paul
†Ward, P. D.	St. Paul
Warren, C. A.	St. Paul
Watz, C. E.	St. Paul
§Webber, F. L.	St. Paul
§Weis, B. A.	St. Paul
Weisberg, Maurice	St. Paul
§Wenzel, G. P.	St. Paul
Werner, O. S.	Cambridge
†Wheeler, M. W.	St. Paul
Whitacre, J. C.	St. Paul
*Whitemore, F. W.	St. Paul
Williams, A. B.	St. Paul
§Williams, C. K.	St. Paul
§Williams, J. A.	St. Paul
§Wilson, J. A.	St. Paul
§Wilson, J. V.	St. Paul
Winnick, J. B.	St. Paul
§Wold, K. C.	St. Paul
Wolff, H. J.	St. Paul
Wolkoff, H. J.	St. Paul
Word, H. L.	St. Paul
Youngren, E. R.	St. Paul
Zachman, L. L.	St. Paul
§Zimmermann, H. B.	St. Paul

RED RIVER VALLEY MEDICAL SOCIETY

Kittson, Mahnomen, Marshall, Norman, Pennington, Polk, Red Lake and Roseau Counties

Regular meetings quarterly
Annual meeting, December

Number of Members: 57

President

Uhley, C. G. . . . . Crookston

Secretary

Sather, R. O. . . . . Crookston

§Adkins, C. M.	Thief River Falls
Anderson, J. T.	Red Lake Falls
Anderson, W. E.	Clearbrook
Bechtel, M. J.	Warren
§Behr, O. K.	Crookston
Berge, D. O.	Roseau
Berlin, A. S.	Hallock
§Bertelsen, O. L.	Crookston

Biedermann, Jacob..Thief River Falls
§Bratrud, Edward....Thief River Falls
§Bratrud, T. E......Thief River Falls
Brink, A. A................Baudette
§Brown, L. L...............Crookston
Carlson, A. E.................Warren
Covey, K. W...............Mahnomen
Delmore, John L. Jr.............Roseau
§Delmore, John L., Sr.........Roseau
Delmore, R. J......................Roseau
Dodds, W. C.......Thief River Falls
§Erickson, Eskil..............Halstad
§Henney, W. H..............McIntosh
Hollands, W. H...............Fisher
Holmstrom, C. H.............Warren
Janecky, A. G.............Warroad
Johnson, H. C......Thief River Falls
Johnson, R. E.............Crookston
Kirk, G. P..........East Grand Forks
Knutson, G. A..............Hallock
§Kostick, W. R...............Fertile
§Loken, Theodore................Ada
§Lynde, O. G.......Thief River Falls
§Mellby, O. F.......Thief River Falls
§Mercil, W. F.............Crookston
Morley, G. A...............Crookston
Nelson, A. S........Thief River Falls
Nelson, H. E..............Crookston
Nietfeld, A. D................Warren
§Norman, J. F..............Crookston
§Oppegaard, C. L..........Crookston
§Oppegaard, M. O..........Crookston
Parsons, J. G..............Crookston
Pearson, L. O...............Warroad
§Reff, A. R..................Crookston
Rydland, A. D. ....Crookston
†Sather, Allen.....................Fosston
Sather, G. A.......................Fosston
§Sather, R. O................Crookston
§Shedlow, Abraham............Fosston
Skoog-Smith, A. W...........Mahnomen
§Starekow, M. D. ..Thief River Falls
Stensgaard, K. L....Thief River Falls
Stevens, John..................Gonvick
§Torgerson, W. B..................Oklee
§Uhley, C. G................Crookston
Van Rooy, G. T....Thief River Falls
Watson, R. M......Thief River Falls
§Wiltrout, I. G.......................Oslo
Zorn, E. L....................Erskine

REDWOOD-BROWN COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, May
Number of Members: 36

President
Fritsche, C. J.............New Ulm

Secretary
Fesenmaier, O. B..........New Ulm

Anderson, D. C. ....Lamberton
§Benton, P. C..................Gibbon
Bergman, O. B.............St. James
Bratrude, E. J..............St. James
Bregel, F. L.................St. James
§Cairns, R. J..........Redwood Falls
§Domeier, L. H. ....New Ulm
§Dubbe, F. H................New Ulm
§Dysterheft, A. F..............Gaylord
§Esser, O. J. ....New Ulm
§Fesenmaier, O. B..........New Ulm
§Fritsche, Albert.............New Ulm
§Fritsche, C. J.................New Ulm
§Fritsche, T. R.............New Ulm
§Gibbons, F. C..............Comfrey
§Goblirsch, A. P...........Sleepy Eye
§Hammermeister, T. F.......New Ulm
§Hovde, Rolf...............Winthrop
§Keithahn, E. E...........Sleepy Eye
§Kruzick, S. J..............Sleepy Eye
§Kusske, A. L...............New Ulm
Mortensbak, H. E..Great Falls, Mont.
§Nelson, Glen ....Fairfax
Nuessle, W. G............Springfield
§Penk, E. L. ....Springfield
Peterson, R. A..................Vesta
§Reineke, G. F.............New Ulm
§Saffert, C. A...............New Ulm
§Schroeppel, J. E...........Winthrop
§Seifert, O. J..............New Ulm
Senescall, C. R.....Enumclaw, Wash.
§Vogel, H. A. L............New Ulm
§Vogel, J. H................New Ulm
§Weiser, G. B...............New Ulm
§Wohlrabe, E. J............Springfield

RENVILLE COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of month
Annual meeting, November
Number of Members: 21

President
Erickson, R. E...................Hector

Secretary
Johnson, H. E...........Bird Island

§Adams, R. C.............Bird Island
§Billings, R. E..................Franklin
§Brand, W. A..........Redwood Falls
Bushard, W. J...........Minneapolis
§Cosgriff, J. A...................Olivia
Ceplecha, S. F........Redwood Falls
§Dordal, J...............Sacred Heart
§Erickson, R. E...............Hector
§Fawcett, A. M.............Renville
Flinn, T. E...........Redwood Falls
§Gaines, E. C...........Buffalo Lake
§Hinz, W. T..............Bird Island
§Johnson, H. E...........Bird Island
Johnson, O. H.........Redwood Falls
§Johnson, W. E................Morgan
§Leitschuh, Henry ....Sanborn
Lenz, J. R......................Morton
§Mesker, G. H.............Cambridge
§Passer, A. A....................Olivia
Potthoff, C. J......Washington, D. C.
Priesinger, J. W............Renville

RICE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, June
Number of Members: 27

President
Engberg, E. J..............Faribault

Secretary
Stevenson, F. W............Faribault

§Dungay, N. S..............Northfield
§Engberg, E. J..............Faribault
Francis, D. W...........Morristown
§Hanson, A. M..............Faribault
§Hanson, J. W..............Northfield
Huxley, F. R..............Faribault
.Kennedy, G. L..............Faribault
§Lende, Norman.............Faribault
Lexa, F. J..................Lonsdale
McKeon, J. O..............Faribault
§Mears, R. F...............Northfield
Meyer, F. C.....................Kenyon
Meyer, P. F....................Faribault
§Moses, Joseph Jr..........Northfield
Moses, R. R......................Kenyon
Nielsen, A. M...............Northfield
§Nuetzman, A. W...........Faribault
§Robilliard, C. M...........Faribault
Rohrer, C. A..............Waterville
Rumpf, C. W..................Faribault
†Rumpf, W. H...............Faribault
§Stevenson, F. W............Faribault
Street, Bernard............Northfield
§Studer, D. J..................Faribault
Traeger, C. A................Faribault
§Weaver, P. H...............Faribault
§Wilson, W. E..............Northfield

ST. LOUIS COUNTY MEDICAL SOCIETY

Carlton, Cook, Itasca, Lake and St. Louis Counties

Regular meetings, second Thursday every month except July and August
Annual meeting, December
Number of Members: 246

President
Wheeler, D. W...............Duluth

Secretary
Bagley, Elizabeth C...........Duluth

§Abraham, A. L..............Duluth
§Adams, B. S................Hibbing
Addy, E. R..................Gilbert
Anderson, C. L....................Ely
Anderson, G. A..............Hibbing
Anderson, H. R.........Deer River
§Arhelger, S. W.............Duluth
§Arko, J. L..................Hibbing
§Armstrong, E. L............Duluth
§Athens, A. G.................Duluth
†Ayres, G. T...........Phoenix, Ariz.
Bachnik, F. W.............Hibbing
§Backus, R. W............Nopeming
§Bagley, C. M.................Duluth
Bagley, Elizabeth C..........Duluth
Bagley, W. R.................Duluth
Baich, V. M...................Bovey
§Bakkila, H. E................Duluth
§Bardon, Richard.............Duluth
§Barker, J. D..................Duluth
Barney, L. A....................Duluth
§Barrett, E. E..................Duluth
§Becker, F. T..................Duluth
Bepko, Marie K.............Cloquet
Berdez, G. L..................Duluth
§Bianco, A. J..................Duluth
†Binet, H. E...........Grand Rapids
Blackmore, S. C............Biwabik
*Blakely, C. C...............Barnum
Bolz, J. A............Grand Rapids
Bowman, P. G...............Duluth
Booren, J. C....................Duluth
Bowen, R. L..................Hibbing
§Boyer, S. H., Jr..............Duluth
Boyer, S. H., Sr...............Duluth
§*Braverman, N. J...........Duluth
Bray, K. E. ......New Orleans, La.
§Bray, P. N....................Duluth
Bray, R. B...................Biwabik
§Buckley, R. P.................Duluth
§Butler, J. K...................Carlton
Cantwell, W. F....International Falls
Carstens, C. F...............Hibbing
Chapman, T. L................Duluth
Chermak, F. G....International Falls
§Christenson, C. H...........Duluth
§Clark, I. T.......................Duluth
Clarke, E. T.....................Buhl
§Cole, Frank....................Duluth
Collins, A. N....................Duluth
†Collins, H. C..................Duluth
§Coventry, W. A..............Duluth
§Coventry, W. D..............Duluth
Cunningham, C. B...........Virginia
Dahlin, I. T.....................Aurora
§Davies, R. J....................
Richland Highlands, Wash.
§Dickson, F. H., Jr............Proctor
§Dittrich, R. J....................Duluth
§Doolittle, L. E.................Duluth
Doyle, G. C......................Duluth
§Eckman, P. F....................Duluth
§Eckman, R. J....................Duluth
§Ekblad, J. W....................Duluth

§Elias, F. J.	Duluth
§Emanual, K. W.	Duluth
Eppard, R. M.	Cloquet
Erskine, G. M.	Grand Rapids
§Estrem, T. A.	Hibbing
Ewens, H. B.	Virginia
§Fawcett, K. R.	Duluth
Fearing, J. E.	Virginia
§Fellows, M. F.	Duluth
Ferrell, C. R.	Grand Rapids
§Fischer, M. McC.	Duluth
Fisketti, Henry	Duluth
Flynn, B. F.	Hibbing
§Fredericks, M. G.	Duluth
Gendron, J. F.	Grand Rapids
§Gillespie, M. G.	Duluth
§Goldish, D. R.	Duluth
§Goodman, C. E.	Virginia
§Gowan, L. R.	Duluth
Graham, A. W.	Chisholm
§Grahek, J. P.	Ely
§Graves, W. N.	Duluth
Grinley, A. V.	Grand Rapids
Haney, C. L.	Duluth
§Hanson, E. O.	Cloquet
§Harris, C. N.	Hibbing
Hartman, Jack	Soudan
Hatch, W. E.	Duluth
Hathaway, S. J.	Tacoma, Wash.
Hayes, M. F.	Nashwauk
§Hedberg, G. A.	Nopeming
Heiam, W. C.	Cook
§Hilding, A. C.	Duluth
Hill, F. E.	Duluth
Hirschboeck, F. J.	Duluth
§Hoff, H. O.	Duluth
§Houkom, S. S.	Duluth
Hutchinson, Henry	Moose Lake
Jacobson, Clarence	Chisholm
§Jacobson, F. C.	Duluth
§Jensen, T. J.	Duluth
§Jeronimus, H. J.	Duluth
§Jessico, C. M.	Duluth
§Joffe, H. H.	Duluth
§Johnson, K. E.	Duluth
Johnsrud, L. W.	Chisholm
Jolin, F. M.	Bovey
Kelley, K. J.	Bigfork
Kemp, M. W.	Alton, Ill.
*Kingsbury, E. M.	Moose Lake
§Klein, Harry	Duluth
§Knapp, F. N.	Duluth
§Knoll, W. V.	Duluth
§Kohlbry, C. O.	Duluth
Kotchevar, F. R.	Eveleth
†Kozberg, Oscar	Moose Lake
§Krueger, V. R.	Nopeming
§La Bree, R. H.	Duluth
§Laird, A. T.	Duluth
Lenont, C. B.	Virginia
Lepak, F. J.	Duluth
§Litman, S. N.	Duluth
Loofbourrow, E. H.	Keewatin
§Luth, D. V.	Duluth
†McCoy, Mary K.	Duluth
McDonald, A. L.	Duluth
§McHaffie, O. L.	Duluth
McKenna, M. J.	Grand Rapids
McLane, W. O.	Duluth
McLeod, J. L.	Grand Rapids
§McNutt, J. R.	Duluth
§Macfarlane, P. H.	Chisholm
§MacRae, G. C.	Duluth
§Magney, F. H.	Duluth
§Magraw, R. M.	St. Paul
§Malmstrom, J. A.	Virginia
§Manley, J. R.	Duluth
†Marcley, W. J.	Minneapolis
Marshall, Helen S.	Statesan, Wis.
§Martin, W. C.	Duluth
§Mayne, R. M.	Duluth
Mead, C. H.	Duluth
§Merriman, L. L.	Duluth
Meyer, J. O.	Grand Rapids
Minckler, J. E.	St. Paul
Miners, G. A.	Deer River
§Minty, E. W.	Duluth
§Moe, R. J.	Duluth
Moe, Thomas	Moose Lake
Mollers, T. P.	Mountain Iron
Monroe, P. B.	Cloquet
Monserud, N. O.	Cloquet
More, C. W.	Eveleth
§Morsman, L. W.	Hibbing
§Mueller, R. F.	Two Harbors
Mueller, Selma C.	Duluth
Murray, R. A.	Hibbing
Neff, W. S.	Virginia
Nelson, E. H.	Chisholm
Nelson, L. S.	Hibbing
§Nelson, R. L.	Duluth
§Nicholson, M. A.	Duluth
Norberg, C. E.	Cloquet
§Nutting, R. E.	Duluth
§Olson, A. E.	Duluth
Olson, A. O.	Duluth
Palmer, H. A.	Blackduck
†Parker, O. W.	Duluth
Parker, W. H.	Chisholm
§Parson, E. I.	Duluth
Pasek, A. W.	Cloquet
§Patch, O. B.	Duluth
Pearsall, R. P.	Virginia
§Pederson, R. C.	Duluth
Pennie, D. F.	Duluth
Peterson, E. N.	Virginia
Peterson, J. H.	Minneapolis
§Pfuetze, K. H.	Cannon Falls
Pollard, W. H., Jr.	Duluth
§Power, J. E.	Duluth
Puumala, R. H.	Cloquet
Raadquist, C. S.	Hibbing
Raihala, John	Virginia
§Raiter, R. F.	Cloquet
Reed, Paul	Virginia
†Robinson, J. M.	Goshen, N. Y.
Rokala, H. E.	Virginia
§†Rood, D. C.	Duluth
Rosenfield, A. B.	Minneapolis
Rowe, O. W.	Duluth
§Rowles, E. K.	Coleraine
§Rudie, P. S.	Duluth
§Ryan, W. J.	Duluth
Sach-Rowitz, Alvin	Moose Lake
§Salter, R. A.	Virginia
Sandell, S. T.	Nopeming
Sarff, O. E.	Duluth
Sax, M. H.	Duluth
Sax, S. G.	Duluth
§Schneider, L. E.	Duluth
§Schroder, C. H.	Duluth
Schweiger, T. R.	Hibbing
Seashore, R. T.	St. Paul
*Shastid, T. H.	Duluth
Shaw, A. W.	Virginia
Sher, D. A.	Virginia
Siegel, J. S.	Virginia
§Sinamark, Andrew	Hibbing
Sisler, C. E.	Grand Rapids
§Smith, C. M.	Duluth
Smith, W. R.	Grand Marais
Snyker, O. E.	Ely
§Spang, A. J.	Duluth
§Spang, J. S.	Duluth
Spicer, F. W.	Duluth
Spurbeck, R. G.	Cloquet
Strathern, M. L.	Gilbert
§Strauss, E. C.	Duluth
§Strobel, W. G.	Duluth
Stuart, A. B.	Cloquet
Sutherland, H. N.	Ely
Swedberg, W. A.	Duluth
§Swenson, A. O.	Duluth
§Taylor, C. W.	Duluth
§Teich, K. W.	Duluth
§Terrell, B. J.	Nopeming
§Tibbetts, M. H.	Duluth
Tilderquist, D. L.	Duluth
Tingdale, Carlyle	Hibbing
Trytten, E. G.	Duluth
§Tuohy, E. L.	Duluth
§Urberg, S. E.	Duluth
Van Valkenberg, J. D.	Floodwood
§†Walker, A. E.	Duluth
§Wallace, M. O.	Duluth
§Wells, A. H.	Duluth
§Wheeler, D. W.	Duluth
Winter, J. A.	Duluth
§Young, T. O.	Duluth
†Zlatovski, M. L.	Duluth

SCOTT-CARVER COUNTY MEDICAL SOCIETY

Regular meetings, second Tuesday of the alternate months
Annual meeting, June
Number of Members: 29

President
Westerman, F. C. .... Montgomery

Secretary
Schimelpfenig, G. T. .... Chaska

Ahrens, C. F.	Prior Lake
Bodaski, A. A.	Montgomery
Bratholdt, J. W.	Watertown
§Buck, F. H.	Shakopee
Carlson, N. C.	Watertown
§Cervenka, C. F.	New Prague
§Doherty, E. M.	New Prague
§Havel, H. W.	Jordan
Hebeisen, M. B.	Chaska
§Juergens, H. M.	Belle Plaine
Klein, J. C.	Shakopee
§Kortsch, F. P.	Prior Lake
§Kucera, S. T.	Lonsdale
Leibold, E. F.	New Prague
Martin, T. P.	Arlington
Nagel, H. D.	Waconia
Nelson, K. L.	Clara City
Ninneman, N. N.	Waconia
Novak, E. E.	New Prague
Olson, C. J.	Belle Plaine
§Pearson, B. F.	Shakopee
Pogue, R. E.	Watertown
§Ponterio, J. E.	Shakopee
†Reiter, H. W.	Shakopee
Schimelpfenig, G. T.	Chaska
§Simons, B. H.	Chaska
§†Westerman, A. E.	Montgomery
§Westerman, F. C.	Montgomery
Wunder, H. E.	Shakopee

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

Cottonwood, Jackson, Murray, Nobles, Pipestone and Rock Counties
Regular meetings, at call
Annual meeting, October
Number of Members: 63

President
Halpern, D. J. .... Brewster

Secretary
Mork, B. O., Jr. .... Worthington

Anderson, O. W.	Luverne
§Arnold, E. W.	Adrian
§Balmer, A. I.	Pipestone
Basinger, H. P.	Windom
Basinger, H. R.	Mountain Lake
Beckering, Gerrit	Edgerton
§Benjamin, W. G.	Pipestone
Bofenkamp, F. W.	Luverne
†Brown, A. H.	Pipestone
Burleigh, J. S.	Luverne
Carlson, J. V.	Westbrook
Christiansen, H. A.	Jackson
Chunn, S. S.	Pipestone
§DeBoer, Hermanus	Edgerton
Doman, V. W.	Lakefield
Doms, H. C. A.	Slayton
§Hallin, R. P.	Worthington
Halloran, W. H.	Jackson
§Halpern, D. J.	Brewster
§Harrison, P. W.	Worthington
Hebbel, Robert	Minneapolis
§Heiberg, O. M.	Worthington
§Hitchings, W. S.	Lakefield
Hoyer, L. J.	Windom
Johnson, R. M.	Slayton
Kabrick, O. A.	Jackson
Karleen, B. N.	Jackson
§Kilbride, E. A.	Worthington
†Kilbride, J. S.	Worthington
Laikola, L. A.	Adrian
§Lohmann, J. G.	Pipestone
Maitland, E. T.	Jackson
†Manson, F. M.	Worthington
McElmeel, E. F.	Seattle, Wash.
§Mork, B. O., Sr.	Worthington
§Mork, B. O., Jr.	Worthington
§Nealy, D. E.	Adrian
Nickerson, J. R.	Heron Lake
Pankratz, P. J.	Mountain Lake
Patterson, H. D.	Slayton
Pierson, R. F.	Slayton
§Piper, W. A.	Mountain Lake
Rogers, C. W.	Minneapolis
§Rose, J. T.	Lakefield
§Schade, F. L.	Worthington
§Schmidt, W. R.	Worthington

Schutz, E. S..........Mountain Lake
Sherman, C. L..............Luverne
§Slater, S. A...........Worthington
§Sogge, L. L................Windom
§Sorum, F. T..................Jasper
Stam, John...........Worthington
§Stanley, C. R..........Worthington
Stevenson, B. M..............Fulda
Stratte, H. C...............Windom
Tofte, Josephine.........Minneapolis
Waller, J. D...............Pine City
§Wells, W. B................Jackson
§Williams, C. A.............Pipestone
Williams, L. A...............Slayton
*Wright, C. O................Luverne

STEARNS-BENTON COUNTY MEDICAL SOCIETY

Regular meetings, third Thursday of month
Annual meeting, third Thursday of December
Number of Members: 56

President
Goehrs, G. G..............St. Cloud

Secretary
Libert, J. N...............St. Cloud

§Baumgartner, F. H..........Albany
Beuning, J. B..............St. Cloud
Brigham, C. F..............St. Cloud
§Buscher, J. C.............St. Cloud
§Clark, H. B...............St. Cloud
Cleaves, W. D..........Sauk Center
§Donaldson, C. S..............Foley
Du Bois, J. F..........Sauk Center
§Emerson, E. E................Osakis
Engstrom, G. F..............Belgrade
§Evans, L. M............Sauk Rapids
§Fleming, T. N.............St. Cloud
§Friesleben, William......Sauk Rapids
§Gaida, J. B...............St. Cloud
Goehrs, G. H..............St. Cloud
Goehrs, H. W..............St. Cloud
Grant, J. C...............Sauk Center
Haberman, Emil...............Osakis
§Halenbeck, P. L...........St. Cloud
§Hall, W. E..............Maple Lake
†Hemstead, Werner......Fergus Falls
Henry, C. J...................Milaca
§Jones, R. N...............St. Cloud
§Kelly, J. F............Cold Springs
Kettlewell, R. B.........Sauk Center
Kohler, D. W.............St. Joseph
§Koop, S. H................Richmond
Kuhlman, L. B...............Melrose
Lewis, C. B................St. Cloud
Libert, J. N...............St. Cloud
§Luckemeyer, C. J..........St. Cloud
§McDowell, J. P............St. Cloud
§Mahowald, A..................Albany
Meyer, A. A..................Melrose
§Milhaupt, E. N............St. Cloud
§Murphy, James E..........St. Cloud
Musachio, N. F.................Foley
Myre, C. R................Paynesville
§Nessa, C. B...............St. Cloud
§O'Keefe, J. P.............St. Cloud
§Peterson, R. T............St. Cloud
Raetz, S. J..............Maple Lake
§Richards, W. B............St. Cloud
§Reif, H. J................St. Cloud
Sandven, N. O............Paynesville
Schatz, F. J...............St. Cloud
§Schmitz, E. J...........Holdingford
Sherwood, G. E..............Kimball
Stangl, P. E...............St. Cloud
Stewart, N. E.....St. Petersburg, Fla.
Veranth, L. A..............St. Cloud
§Walfred, K. A.............St. Cloud
§Wenner, W. T..............St. Cloud
§Wetzel, E. V..............St. Cloud
Wittrock, L. H...............Watkins
Zachman, A. H...............Melrose

STEELE COUNTY MEDICAL SOCIETY

Regular meetings, at call
Annual meeting, January
Number of Members: 15

President
Berghs, L. V.............Owatonna

Secretary
Stransky, T. W..........Owatonna

Berghs, L. V..............Owatonna
Dewey, D. H.............Owatonna
Ertel, E. O...............Ellendale
§Hartung, E. H............Claremont
Kurtin, H. J......Blooming Prairie
McEnaney, C. T..........Owatonna
McIntyre, J. A...........Owatonna
Melby, Benedik.....Blooming Prairie
Moorhead, D. E...........Owatonna
§Nelson, E. J.............Owatonna
Roberts, O. W.............Owatonna
Schaefer, J. F............Owatonna
Senn, E. W................Owatonna
Stransky, T. W............Owatonna
§Wilkowske, R. J..........Owatonna

UPPER MISSISSIPPI MEDICAL SOCIETY

Aitkin, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Koochiching,
Lake of the Woods, Morrison, Todd and Wadena Counties
Regular meetings, Spring, Summer, Fall, Winter
Annual meeting, February
Number of Members: 92

President
Ringle, O. J.................Walker

Secretary
Badeaux, G. I...............Brainerd

Adkins, G. H.............Pine River
Amundson, A. E.........Little Falls
Anderson, F. C..........Little Falls
Badeaux, G. I...............Brainerd
§Beise, R. A................Brainerd
Bender, J. H................Brainerd
§Borgerson, A. H........Long Prairie
Cardle, G. E................Brainerd
*†Christie, G. R..........Long Prairie
Christie, R. L..........Long Prairie
Closuit, F. C..................Aitken
Cook, J. M....................Staples
Coombs, C. H..............Cass Lake
†Corrigan, J. E..............Spooner
§Crow, E. R..........Ah-Gwah-Ching
§Dale, L. N....................Crosby
Davis, L. F...................Wadena
Davis, L. T...................Wadena
Davis, T. C...................Wadena
Eiler, John..............Park Rapids
§Erickson, Alvin........Long Prairie
Eyres, T. E............Pequot Lakes
Fait, R. V...............Little Falls
§Fitzsimmons, W. E..........Brainerd
Friefeld, Saul................Wadena
Garlock, A. V................Bemidji
Garlock, D. H................Bemidji
Gerber, M. P................Brainerd
Ghostley, Mary C............Puposky
†Gilmore, Rowland............Bemidji
Grogan, J. S..................Wadena
Groschupf, T. P.............Bemidji
Grose, F. N.................Clarissa
§Halladay, G. J.............Brainerd
Hanover, R. D............Little Fork
Healy, R. T.....................Pierz
Hendricks, E. J. ....Verndale
†House, Z. E...............Cass Lake
Houston, D. M. ....Park Rapids
§Hubbard, O. E..............Brainerd
Hubin, E. G. ....Swanville
Jamieson, E. F..............Brainerd
†Johnson, C. E............Pine River
Johnson, D. L...........Little Falls
Johnson, E. W................Bemidji
Kinports, E. B....International Falls
Knight, E. G...............Swanville
Larson, Leroy ....Bagley
Laughlin, J. T. ....Grey Eagle
§Lee, H. W. ....Brainerd
Leemhuis, G. H. ....Aitken
§Lenarz, A. J. ....Browerville
Longfellow, Helen B. ......Brainerd
Lund, W. J....................Staples
Mark, Hilbert............Minneapolis
McCann, D. F.................Bemidji
Mitby, I. L....................Aitkin
Monahon, R. H., Jr..............
International Falls
§Mosby, M. E............Long Prairie
§Mulligan, A. M.............Brainerd
Nelson, Bernette G..........Menahga
Nelson, Bernice A..........Northome
§Nelson, N. P...............Brainerd
Nixon, James B................Crosby
Nolan, D. E...........Dayton, Ohio
Parker, Warren E..............Sebeka
Petraborg, Harvey T...........Aitkin
Pierce, C. H..................Wadena
§Potek, D. M. ....International Falls
§Quanstrom, V. E............Brainerd
§†Ratcliffe, J. J................Aitkin
Rice, H. G.....................Aitkin
Ringle, O. F..................Walker
§Sanderson, A. G...........Deerwood
§Simons, E. J...............Swanville
§Smith, B. A....................Crosby
Stein, R. J......................Pierz
§Thabes, J. A., Sr............Brainerd
§Thabes, J. A., Jr............Brainerd
Trommald, Gladys ....Brainerd
Vandersluis, C. W............Bemidji
§Watson, A. M. ....Royalton
†Watson, J. D. ....Minneapolis
Watson, P. T. ....Northfield
§Watson, S. W...............Royalton
Whittemore, D. D............Bemidji
Will, C. B.....................Bertha
Will, W. W....................Bertha
§Williams, M. M. ....Ah-Gwah-Ching
Wilson, V. O............Minneapolis
Wingquist, C. G...............Crosby
Withrow, M. E...International Falls

WABASHA COUNTY MEDICAL SOCIETY

Regular meetings, Spring and Fall
Annual meeting, first Thursday after first Monday in October
Number of Members: 14

President
Flesche, B. A...........Lake City

Secretary
Wilson, W. F.............Lake City

§Bayley, E. C.............Lake City
§Bouquet, B. J..............Wabasha
§Bowers, R. N.............Lake City
Collins, J. S...............Wabasha
*Dempsey, D. P..............Kellogg
§Ekstrand, L. M. ....Wabasha
§Ellis, E. W....................Elgin
§Flesche, B. A.............Lake City
Glabe, R. A................Plainview
§Mahle, D. G...............Plainview
§Ochsner, C. G..............Wabasha
Replogle, W. H..............Wabasha
§Wellman, T. G.............Lake City
§†Wilson, W. F. ....Lake City

WASECA COUNTY MEDICAL SOCIETY

Regular meetings, every six months
Annual meeting, January
Number of Members: 9

President
Olds, G. H..........New Richland

Secretary
Oeljen, S. C. G..............Waseca

§Davis, R. D..................Waseca
§Gallagher, B. J...............Waseca
§Hottinger, R. C...........Janesville
§McIntire, H. M.............Waseca
§Oeljen, S. C. G.............Waseca
§Olds, G. H...........New Richland
†Spittler, R. O..........New Richland
§Swenson, O. J...............Waseca
§Wadd, C. T.................Janesville

WASHINGTON COUNTY MEDICAL SOCIETY

Regular meetings, Second Tuesday in each month, except June, July, August
Annual meeting, second Tuesday in December
Number of Members: 16

President
McCarten, F. M............Stillwater

Secretary
Boleyn, E. S...............Stillwater

§Boleyn, E. S...............Stillwater
§Carlson, R. E..............Stillwater
§†Haines, J. H..............Stillwater
Holcomb, J. T...Marine-on-St. Croix
Humphrey, W. R..........Stillwater
§Johnson, R. G.............Stillwater
§Josewski, R. J..............Stillwater
§McCarten, F. M............Stillwater
Poirier, J. A.............Forest Lake
Ruggles, G. M...........Forest Lake
§Samson, E. R..............Stillwater
§Sherman, C. H...............Bayport
§Stuhr, J. W.................Stillwater
Thompson, V. C...Marine-on-St. Croix
Van Meier, Henry..........Stillwater
Wilkinson, Stella...........Faribault

WATONWAN COUNTY MEDICAL SOCIETY

Pending approval of the 1947 House of Delegates of the dissolution of the above society, the following physicians have become members of the Redwood-Brown County Medical Society

Bergman, O. B...........St. James
Bratrud, E. J..............St. James
Bregel, F. L..............St. James
*Grimes, H. B...............Madelia

WEST CENTRAL MINNESOTA MEDICAL SOCIETY

Big Stone, Pope, Stevens, and Traverse Counties
Regular meetings, March, May, September and November
Annual Meeting, September
Number of Members: 28

President
Merrill, Robert ....Morris

Secretary
Rydburg, W. C.............Brooten

§Arneson, A. I................Morris
§Behmler, F. W...............Morris
§Bergan, Otto..................Clinton
§†Bolsta, Charles...........Ortonville
§Dahle, M. B...............Glenwood
§Eberlin, E. A.............Glenwood
§Elsey, E. M................Glenwood
Elsey, J. R. ....Glenwood
Fitzgerald, E. T..............Morris
Gericke, J. T..............Glenwood
§Giesen, A. F...............Starbuck
Hedemark, H. H.........Ortonville
Hedemark, T. A..........Ortonville
§Karn, B. R.................Ortonville
§Karn, J. F..................Ortonville
Lindberg, A. L..............Wheaton
§Linde, Herman.................Cyrus
Magnuson, A. E............Wheaton
§Merrill, R. W..................Morris
McIver, B. A....................Lowry
§Mooney, L. P.............Graceville
Muir, W. F. ....Browns Valley
§O'Donnell, D. M..........Ortonville
§Oliver, I. L...............Graceville
Ransom, M. L..............Hancock
Rossberg, Raymond A.........Morris
§Rydburg, W. C..............Brooten
Swedenberg, Paul A........Glenwood
Wagner, N. W. ....Graceville

WINONA COUNTY MEDICAL SOCIETY

Regular meetings, first Monday in January, April, July, October
Annual meeting, first Monday in January
Number of Members: 30

President
Hamlon, John............St. Charles

Secretary
Heise, Paul...................Winona

§Benoit, F. T..................Winona
§Boardman, D. V.............Winona
§Canfield, W. W..............Winona
§Christensen, E. E. ....Winona
§Hamlon, J. S............St. Charles
§Heise, Herbert..............Winona
§Heise, Paul...................Winona
§†Heise, W. F. C.............Winona
§Heise, W. V..................Winona
§Johnston, L. F...............Winona
Keyes, J. D....................Winona
§Loomis, G. L.................Winona
§Mattison, P. A................Winona
McLaughlin, E. M...........Winona
§Meinert, A. E.................Winona
Nauth, B. S....................Winona
Neumann, C. A. ....Winona
§Page, R. L..............St. Charles
§†Robbins, C. P...............Winona
§Roemer, H. J.................Winona
§Roth, F. D...................Lewiston
§Satterlee, H. W.............Lewiston
§Schaefer, Samuel ....Winona
§Steiner, I. W..................Winona
§Tweedy, G. J..................Winona
Tweedy, J. A...................Winona
§Tweedy, R. B.................Winona
Vollmer, F. J...................Winona
§Wilson, R. H..................Winona
§Younger, L. I.................Winona

WRIGHT COUNTY MEDICAL SOCIETY

Regular meetings quarterly
Annual meeting, October
Number of Members: 16

President
Greenfield, W. T.............Delano

Secretary
Catlin, J. J..................Buffalo

§Anderson, W. P.............Buffalo
§Bendix, L. M............Annandale
§Catlin, J. J....................Buffalo
§Catlin, T. J....................Buffalo
§Ellison, F. E..............Monticello
§Greenfield, W. T.............Delano
Grundset, O. J.............Montrose
Guilfoile, P. J..................Delano
Harriman, Leonard.....Howard Lake
§Hart, W. E..............Monticello
Peterson, O. L...............Cokato
§Ridgway, A. M............Annandale
§Roholt, C. L..................Waverly
§Swezey, B. F. ....Buffalo
§Thielen, R. D...........St. Michael
§Thompson, Arthur ....Cokato

Alphabetic Roster

Key to Symbols: *Deceased; †Affiliate, Associate or Life Member; ‡In Service; §Wife is member of Woman's Auxiliary

Aagaard, G. N., Jr......Minneapolis
Aanes, A. M..............Red Wing
Abbott, K. H..............Rochester
†Aborn, W. H..............Hawley
§Abraham, A. L............Duluth
§Abramson, Milton........Minneapolis
Adair, A. F., Jr............St. Paul
§Adams, B. S..............Hibbing
§Adams, R. C............Bird Island
§Adams, Richard C..........Rochester
Addy, E. R..................Gilbert
Adkins, C. D............Minneapolis
§Adkins, C. M......Thief River Falls
Adkins, G. H............Pine River
§Adson, A. W..............Rochester
Adler, B. C................St. Paul
Ahern, E. E..............Minneapolis
§Ahlfs, J. J................Caledonia
§Ahrens, A. E..............St. Paul
§Ahrens, A. H..............St. Paul
Ahrens, C. F............Prior Lake
†§Aitkens, H. B..............LeCenter
Akester, Ward..........Fergus Falls
Akins, W. M..............Red Wing
§Albrecht, H. H............Lindstrom
§Alden, J. F................St. Paul
§Aldrich, C. A..............Rochester
*†Alexander, F. H............St. Paul
Alexander, H. A..........Minneapolis
Alger, E. W..............Minneapolis
§Aling, C. A..............Minneapolis
§†Aling, C. P............Minneapolis
§Allen, E. V. N............Rochester
§Allen, H. B....................Austin
§*Allen, H. W............Minneapolis
§Altnow, H. O............Minneapolis
§Alvarez, W. C............Rochester
Amberg, Samuel............Rochester
Ambrusko, J. S............Rochester
Amundsen, A. E..........Little Falls
§Andersen, A. G..........Minneapolis
§Andersen, S. C..........Minneapolis
Anderson, C. D............Rochester
Anderson, C. L....................Ely
Anderson, Donald..........Lamberton
§Anderson, D. D..........Minneapolis
§Anderson, D. P., Jr............Austin
§Anderson, E. D..........Minneapolis
§Anderson, E. R..........Minneapolis
Anderson, F. C..........Little Falls
§Anderson, F. J..........Minneapolis
Anderson, G. A..............Hibbing
Anderson, H. R..........Deer River
§Anderson, J. K..........Minneapolis
Anderson, J. T.......Red Lake Falls
§Anderson, K. W..........Minneapolis
Anderson, M. E., Jr.........Rochester
§Anderson, M. J............Rochester
§Anderson, M. W............Rochester
*Anderson, N. E..............Harmony
Anderson, O. W..............Luverne
§Anderson, R. E..............Willmar
Anderson, R. E............Rochester
Anderson, S. H............Red Wing
§Anderson, U. S..........Minneapolis
§Anderson, W. P................Buffalo
Anderson, W. E..........Clearbrook
Anderson, W. T..........Minneapolis
Andreassen, E. C..........Minneapolis
Andresen, K. D..........Minneapolis
§Andrews, R. N..............Mankato
§Andrews, R. S..........Minneapolis
Arends, A. L......Jamestown, N. D.
§Arey, S. L..............Minneapolis
§Arhelger, S. W................Duluth
§Arko, J. L....................Hibbing
§Arlander, C. E..........Minneapolis
§Arling, L. S..............Minneapolis
Arling, P. A..............Rochester
§Armstrong, E. L..............Duluth
Armstrong, R. S..........Winnebago
§Arndt, H. W.........Detroit Lakes
§Arneson, A. I..................Morris
Arnold, Anna W.........Minneapolis
Arnold, D. C..............Minneapolis
§Arnold, E. W..................Adrian
§Arnquist, A. S..............St. Paul
Arnson, J. M..................Benson
§Arny, F. P..................St. Paul
§Arvidson, C. G..........Minneapolis
§Arzt, P. K..................St. Paul
‡Ashburn, F. S..............Rochester
§Ashley, W. F..............Rochester
§Askren, E. L., Jr.........Rochester
§Athens, A. G..................Duluth
§Aune, Martin............Minneapolis
†Aurand, W. H..........Minneapolis
§Aurelius, J. R..............St. Paul
§Ausman, C. F..............St. Paul
†Ayres, G. T..........Phoenix, Ariz.

Babb, F. S..................Rochester
Bachnik, F. W..............Hibbing
§Backus, R. W............Nopeming
§Bacon, D. K................St. Paul
§Bacon, J. F................Rochester
§†Bacon, L. C..............St. Paul
Badeaux, G. I..............Brainerd
§Baggenstoss, A. H.........Rochester
§Bagley, C. M..................Duluth
Bagley, Elizabeth C..........Duluth
Bagley, W. R..................Duluth
Baich, V. M....................Bovey
§Bailey, J. A................Rochester
§Bailey, R. B................Fairmont
§Bair, H. L..................Rochester
Baird, J. W..............Minneapolis
§Baken, M. P............Minneapolis
Baker, A. B..............Minneapolis
§Baker, A. C............Fergus Falls
Baker, A. T..............Minneapolis
Baker, C. E.......... ......Herman
§Baker, E. L..............Minneapolis
§Baker, G. S................Rochester
§Baker, H. R..................Hayfield
Baker, Jeannette L......Fergus Falls
Baker, Looe..............Minneapolis
§Baker, N. H............Fergus Falls
Baker, R. L..................Hayfield
§Bakkila, H. E..................Duluth
§Balcome, M. M..............St. Paul
§Balfour, D. C..............Rochester
§Balfour, D. C., Jr.........Rochester
§Balfour, W. M............Rochester
§Balkin, S. G............Minneapolis
§Balmer, A. I..............Pipestone
Bank, H. E..............Minneapolis
‡Banner, E. A..............Rochester
§Barber, T. E....................Austin
§Bardon, Richard..............Duluth
§Bargen, J. A................Rochester
§Barger, J. D................Rochester
§Barker, J. D....................Duluth
§Barker, N. W..............Rochester
§Barnes, A. R................Rochester
Barnett, J. M................St. Paul
Barney, L. A....................Duluth
§Barr, L. C..............Albert Lea
‡Barr, M. M............McCoy, Wis.
Barr, R. N..............Minneapolis
Barr, W. H......................Wells
§Barrett, E. E..................Duluth
§Barron, Moses............Minneapolis
§Barry, L. W..................St. Paul
Barsness, Nellie O. N........St. Paul
Barton, J. C..................St. Paul
Basinger, H. P..............Windom
Basinger, H. R.......Mountain Lake
Batdorf, B. N.........Good Thunder
†Barber, J. P............Minneapolis
§Baumgartner, F. H..........Albany
§Baxter, S. H............Minneapolis
§Bayard, H. F............Minneapolis
§Bayley, E. C..............Lake City
Bayrd, E. D..................Rochester
§Beach, Northrup.........Minneapolis
Beahrs, O. H................Rochester
§†Beals, Hugh................St. Paul
†Beard, A. H............Minneapolis
§Beare, J. B..................Rochester
‡Bearzy, H. J................Rochester
Bechtel, M. J..................Warren
§Becker, F. T....................Duluth
Beckering, Gerrit............Edgerton
§†Beckman, W. G..................
San Francisco, Calif.
§Bedford, E. W..........Minneapolis
§Beech, R. H..................St. Paul
§Beek, H. O..................St. Paul
Beer, J. J......................St. Paul
§Behmler, F. W..................Morris
§Behr, O. K..................Crookston
§Beise, R. A....................Brainerd
Beiswanger, R. H........Minneapolis
§Bell, C. C......................St. Paul
†Bell, E. T................Minneapolis
§Belote, G. B................Caledonia
Belzer, M. S..............Minneapolis
Bender, J. H..................Brainerd
§Bendix, L. H..............Annandale
§Benedict, W. L............Rochester
§Benepe, J. L..................St. Paul
Benesh, L. A............Minneapolis
Benesh, N. G............Minneapolis
§Benjamin, A. E..........Minneapolis
§Benjamin, E. G..........Minneapolis
§Benjamin, H. G..........Minneapolis
§Benjamin, W. G............Pipestone
§Benn, F. G..............Minneapolis
‡Bennett, J. G..............Rochester
Bennett, J. K........Phoenix, Ariz.
‡Bennett, W. A............Rochester
Bennion, P. H................St. Paul
§Benoit, F. T....................Winona
§Bentley, N. P................St. Paul
§Benton, P. C..................Gibbon
Bepko, Marie K..............Cloquet
Berdez, G. L....................Duluth
§Bergan, Otto..................Clinton
Berge, D. O....................Roseau
Berger, A. G..............Minneapolis
Bergh, G. S..............Minneapolis
§Bergh, L. N..............Montevideo
Bergh, Solveig, M.........Minneapolis
Berghs, L. V................Owatonna
Bergman, O. B..............St. James
Bergquist, K. E..........Battle Lake
§Berkman, D. M............Rochester
§Berkman, D. S............Rochester
§Berkman, J. M............Rochester
§Berkwitz, N. J..........Minneapolis
Berlin, A. S....................Hallock
Berman, Reuben.........Minneapolis
Bernstein, W. C..............St. Paul
§Bertelson, O. L............Crookston
§Bessesen, A. N., Jr.......Minneapolis
§Bessessen, D. H..........Minneapolis
Bessessen, W. A..........Minneapolis
Beuning, J. B..............St. Cloud
§Bianco, A. J....................Duluth
§Bicek, J. F....................St. Paul
§Bickel, W. H................Rochester
Biedermann, Jacob..Thief River Fallls
Bieter, R. N..............Minneapolis
§Bigelow, C. E..........Dodge Center
Bigler, I. E....................Perham
§Billings, R. E................Franklin
†Binet, H. E............Grand Rapids
Binger, H. E..................St. Paul
Biorn, C. L..................Rochester
Black, A. S., Jr..............Rochester
Black, E. J. ....St. Paul
§Black, B. M................Rochester
Black, W. A................Rochester
Blackburn, C. M. ....Rochester
Blackmore, S. C. ....Biwabik
‡Blaisdell, J. S..............Rochester
Blake, A. J. ....Hopkins
§Blake, James................Hopkins
§Blake, James A..............Hopkins
†Blake, P. S..............Minneapolis
*Blakely, C. C..................Barnum
§Blakey, A. R....................Osakis
Bloedel, T. J. G. ....Osseo
§Blomberg, W. R............Princeton
Blumenthal, J. S.........Minneapolis
§Boardman, D. V..............Winona
§Bock, R. A....................St. Paul
Bockman, M. W. H......Minneapolis
Bodaski, A. A..........Montgomery
Boeckmann, Egil..............St. Paul
§Boehrer, J. J., Jr.......Minneapolis
Bofenkamp, F. W..............Luverne
§Boies, L. R..............Minneapolis
§Bolender, H. L................St. Paul
§Boleyn, E. S................Stillwater
§Boline, C. A............Battle Lake
§†Bolsta, Charles...........Ortonville
Bolz, J. A..............Grand Rapids
Boman, P. G....................Duluth
Boody, G. J., Jr................Dawson
†Booth, A. E..............Minneapolis
§Boothby, W. M............Rochester
§Boreen, C. A............Minneapolis
Booren, J. C. ....Duluth
Borg, J. F......................St. Paul
§Borgerson, A. H.........Long Prairie
Borgeson, E. J............Minneapolis
§Borman, C. N............Minneapolis
Borowicz, L. A..........Minneapolis
Bosland, H. G..................Willmar

Bossert, C. S.	Mora
Bottolfson, B. T.	Moorhead
§Bouma, L. R.	St. Paul
§Bouquet, B. J.	Wabasha
Bowen, R. L.	Hibbing
§Bowers, G. G.	Minneapolis
§Bowers, R. N.	Lake City
§Bowing, H. H.	Rochester
§Boyd, L. M.	Alexandria
Boyer, S. H.	Duluth
§Boyer, S. H., Jr.	Duluth
Boylan, R. N.	Rochester
Boynton, Ruth E.	Minneapolis
Boysen, Herbert	Madelia
§Boysen, Peter	Pelican Rapids
§Braasch, W. F.	Rochester
§Braastad, F. W.	Rochester
Bradley, W. F.	Rochester
§Brand, G. D.	St. Paul
§Brand, W. A.	Redwood Falls
Brandes, R. W.	Rochester
§Branham, D. S.	Albert Lea
§Branton, B. J.	Willmar
Bratholdt, J. W.	Watertown
§Bratrud, A. F.	Minneapolis
§Bratrud, Edward	Thief River Falls
§Bratrud, T. E.	Thief River Falls
Bratrude, E. J.	St. James
§*Braverman, N. J.	Duluth
Bray, E. R.	St. Paul
Bray, K. E.	New Orleans, La.
§Bray, P. N.	Duluth
Bray, R. B.	Biwabik
Bregel, F. L.	St. James
§Brekke, H. J.	Minneapolis
‡Breslow, Lester	Rochester
§Briggs, J. F.	St. Paul
Briggs, Natalie M.,	Wenatche, Wash.
Brigham, C. F.	St. Cloud
*Brigham, F. T.	Watkins
Brill, Alice K.	Minneapolis
Brink, A. A.	Baudette
Brink, D. M.	Hutchinson
§Broadie, T. E.	St. Paul
§Broders, A. C.	Rochester
§Brodie, W. D.	St. Paul
Brooks, C. N.	Minneapolis
Brooks, L. M.	Rochester
Brooksby, W. A.	Rochester
§Brown, A. E.	Rochester
†Brown, A. H.	Pipestone
†Brown, E. D.	Paynesville
Brown, F. J.	Minneapolis
§Brown, H. A.	Rochester
§Brown, H. S.	Rochester
Brown, J. C.	St. Paul
Brown, J. R.	Minneapolis
§Brown, L. L.	Crookston
Brown, M. H.	Rochester
§Brown, P. W.	Rochester
†Brown, S. P.	Minneapolis
Brown, W. D.	Minneapolis
Browning, W. H.	Rochester
Brownson, B. C.	Rochester
Brownstone, Manuel	Sandstone
§Brunsting, L. A.	Rochester
§Brusegaard, J. F.	Red Wing
Brutsch, G. C.	Minneapolis
Bryan, A. L.	Rochester
§Buchstein, H. F.	Minneapolis
§Buck, F. H.	Shakopee
§Buckley, R. P.	Duluth
§Buie, Louis A.	Rochester
Buirge, R. E.	Minneapolis
Bulinski, T. J.	St. Paul
Bulkley, Kenneth	Minneapolis
§Bunker, B. W.	Anoka
§Burch, E. P.	St. Paul
§Burch, F. E.	St. Paul
§Burchell, H. B.	Rochester
Burleigh, J. S.	Luverne
Burlingame, D. A.	St. Paul
Burmeister, R. O.	Welcome
§Burnap, W. L.	Fergus Falls
Burns, F. M.	Milan
Burns, L. S.	So. St. Paul
Burns, M. A.	Milan
§Burns, R. M.	St. Paul
Burton, C. G.	St. Paul
§Buscher, J. C.	St. Cloud
Bush, R. P.	Rochester
Bushard, W. J.	Minneapolis
§Busher, H. H.	St. Paul
§Butler, J. K.	Carlton
§Butt, H. R.	Rochester
§Butturff, C. R.	Freeborn
§Butzer, J. A.	Mankato
§Buzzelle, L. K.	Minneapolis
§Cable, M. L.	Minneapolis
§Cabot, C. M.	Minneapolis
§Cabot, V. S.	Minneapolis
Cady, L. H.	Minneapolis
§Cain, C. L.	St. Paul
§Cain, J. C.	Rochester
Cain, J. H.	Hoffman
§Cairns, R. J.	Redwood Falls
Calhoun, F. W.	Albert Lea
Callahan, F. F.	St. Paul
Callerstrom, G. W.	Minneapolis
Cameron, Isabell L.	Minneapolis
Cameron, J. H.	Erskine
Cameron, J. M.	Rochester
§Camp, J. D.	Rochester
Camp, W. E.	Minneapolis
§Campbell, D. C.	Rochester
Campbell, L. M.	Minneapolis
§Campbell, O. J.	Minneapolis
§Canfield, W. W.	Winona
Cantwell, W. F.	International Falls
§Cardle, A. E.	Minneapolis
Cardle, G. E.	Brainerd
§Carey, J. B.	Minneapolis
Cariker, Mildred	Rochester
§Carley, W. A.	St. Paul
Carlson, A. E.	Warren
Carlson, C. E.	Alexandria
Carlson, J. V.	Westbrook
§Carlson, Lawrence	Minneapolis
§Carlson, L. T.	Minneapolis
Carlson, N. C.	Watertown
§Carlson, R. E.	Stillwater
Carman, J. E.	Detroit Lakes
‡Carmona, M. G.	Rochester
§Caron, R. P.	Minneapolis
§Carpenter, R. E.	Rochester
Carr, D. T.	Rochester
§Carroll, W. C.	St. Paul
§Carryer, H. M.	Rochester
Carter, J. W., Jr.	Rochester
Carstens, C. F.	Hibbing
Caspers, C. G.	Minneapolis
§Catlin, J. J.	Buffalo
§Catlin, T. J.	Buffalo
§Cavanor, F. T.	Minneapolis
Ceder, E. T.	Minneapolis
Ceplecha, S. F.	Redwood Falls
§Cervenka, C. F.	New Prague
§Chadbourn, C. R.	St. Paul
Challman, S. A.	Minneapolis
Chambers, W. C.	Blue Earth
Chapman, J. P., Jr.	Rochester
Chapman, T. L.	Duluth
§Chatterton, C. C.	St. Paul
Chermak, F. G.	International Falls
Chesley, A. J.	Minneapolis
Chesley, G. L.	Rochester
§Christensen, C. H.	Duluth
§Christensen, E. E.	Winona
Christensen, N. A.	Rochester
§Christenson, G. R.	Minneapolis
§Christiansen, Andrew	St. Paul
Christiansen, H. A.	Jackson
§Christianson, H. W.	Minneapolis
*†Christie, G. R.	Long Prairie
Christie, R. L.	Long Prairie
*†Christison, J. T.	St. Paul
Chunn, S. S.	Pipestone
Ciaramelli, Letizia C.	Rochester
§Clagett, O. T.	Rochester
Clark, F. H.	Rochester
§Clark, H. B.	St. Cloud
§Clark, H. B., Jr.	St. Paul
*†Clark, H. S.	Minneapolis
§Clark, I. T.	Duluth
§Clark, L. W.	Spring Valley
Clarke, E. K.	Minneapolis
Clarke, E. T.	Buhl
‡Clarkson, W. R.	Rochester
§Clay, L. B.	Minneapolis
§Claydon, H. F.	Red Wing
§†Claydon, L. E.	Red Wing
Cleaves, W. D.	Sauk Centre
Clement, J. B.	Lester Prairie
Clifford, G. W.	Alexandria
§Clifton, T. A.	Chatfield
Closuit, F. C.	Aitkin
Clothier, E. F.	Elk River
‡Cluxton, H. E., Jr.	Rochester
Cochrane, B. B.	St. Paul
Cochrane, R. F.	Minneapolis
Coddon, W. D.	St. Paul
Cohen, B. A.	Minneapolis
§Cohen, S. S.	Minneapolis
§Colby, W. L.	St. Paul
§Cole, Frank	Duluth
§Cole, W. H.	St. Paul
Collet, R. W.	Rochester
†Collie, H. G.	St. Paul
Collins, A. N.	Duluth
†Collins, H. C.	Duluth
Collins, J. S.	Wabasha
Colp, E. A.	Minneapolis
Colvin, A. R.	St. Paul
§Combacker, L. C.	Fergus Falls
§Comfort, M. W.	Rochester
Condit, W. H.	Minneapolis
§Conley, F. W.	Rochester
§†Conner, H. M.	Rochester
Connery, D. B.	Rochester
Connolly, C. J.	St. Paul
§Connor, C. E.	St. Paul
§Cook, C. K.	St. Paul
§Cook, E. N.	Rochester
Cook, J. M.	Staples
Coombs, C. H.	Cass Lake
§Cooper, C. C.	St. Paul
Cooper, J. P.	Excelsior
Cooper, M. D.	Winnebago
Cooper, Talbert	Rochester
§Corbett, J. F.	Minneapolis
§Corbin, K. B.	Rochester
Corniea, A. D.	Minneapolis
§Correa, D. H.	Minneapolis
†Corrigan, J. E.	Spooner
§Cosgriff, J. A.	Olivia
Costin, M. E., Jr.	Rochester
§Coulter, E. B.	Minneapolis
§Counseller, V. S.	Rochester
§Countryman, R. S.	St. Paul
§Covell, W. W.	St. Peter
§Coventry, M. B.	Rochester
§Coventry, W. A.	Duluth
§Coventry, W. D.	Duluth
Covey, K. W.	Mahnomen
Cowan, D. W.	Minneapolis
†Cowern, E. W.	No. St. Paul
Cox, W. B.	Rochester
Crabtree, J. C.	Princeton
*Cragg, R. W.	Rochester
§Craig, M. S., Jr.	Rochester
§Craig, W. McK.	Rochester
§Cranmer, R. R.	Minneapolis
†Cranston, R. W.	Minneapolis
§Creevy, C. D.	Minneapolis
§Creighton, R. H.	Minneapolis
†Crewe, J. E.	Rochester
§Critchfield, L. R.	St. Paul
Crombie, F. J.	No. St. Paul
Cronkite, A. E.	Rochester
§Cronwell, B. J.	Austin
§Crow, E. R.	Ah-Gwah-Ching
§Crowley, D. F., Jr.	Rochester
Crump, J. W.	St. Paul
§Culligan, J. M.	St. Paul
§Culligan, L. C.	Minneapolis
§Culver, L. G.	St. Paul
Cumming, H. A.	Minneapolis
Cunningham, B. P.,	Bridgeport, Conn.
Cunningham, C. B.	Virginia
Cunningham, E. S., Jr.,	Rochester
§Curtis, R. A.	LeCenter
Custer, M. D.	Rochester
Cutts, George	Minneapolis
§Dack, L. G.	St. Paul
Dady, E. E.	Minneapolis
§Dahl, E. O.	Minneapolis
§†Dahl, G. A.	Mankato
§Dahl, J. A.	Minneapolis
§Dahle, M. B.	Glenwood
‡Dahleen, H. C.	Rochester
§Dahlin, D. C.	Rochester
Dahlin, I. T.	Aurora
Daignault, Oscar	Benson
§Dale, L. N.	Crosby
§Daniel, D. H.	Minneapolis
§Daniels, B. T.	Rochester
Danielson, K. A.	Litchfield
Danielson, Lennox	Litchfield
Darling, J. P.	Rochester
†Daugherty, E. B.	Marine-on-St. Croix
‡Daugherty, G. W.	Rochester
§Daut, R. V.	Rochester
‡Davies, L. T.	Rochester
§Davis, A. C.	Rochester
§Davis, E. V.	St. Paul
Davis, I. G.	Rushford
§Davis, J. C.	Minneapolis
Davis, L. T.	Wadena
Davis, L. F.	Wadena
§Davis, R. J.	Richland Highlands, Wash.
‡Davis, R. M.	Rochester
§Davis, R. D.	Waseca
Davis, T. C.	Wadena
*†Davis, William	St. Paul
Davis, W. I.	Mound
Day, Lois A.	Rochester
§Dearing, W. H., Jr.	Rochester
§DeBoer, Hermanus	Edgerton
Decker, C. H.	St. Paul
§*DeCourcey, D. M.	St. Paul
§Dedolph, Karl	St. Paul
†Dedolph, T. H.	Minneapolis
‡DeForest, R. E.	Rochester
Delmore, J. L., Jr.	Roseau
§Delmore, J. L.	Roseau
Delmore, R. J.	Roseau
§del Plaine, C. W.	Minneapolis
§Demo, R. A.	Albert Lea
Demong, C. V.	Rochester

*†Dempsey, D. P.	Kellogg
§Denman, A. V.	Mankato
Dennis, Clarence	Minneapolis
§Derauf, B. I.	St. Paul
§Desjardins, A. U.	Rochester
Deterling, R. A.	Rochester
Deters, D. C.	St. Paul
§Devereaux, T. J.	Wayzata
Devine, K. D.	Rochester
Devney, J. W.	Rochester
DeVoe, R. W.	Rochester
DeWeerd, J. H., Jr.	Rochester
Dewey, D. H.	Owatonna
§Dickson, J. A., Jr.	Rochester
§Dickson, F. H., Jr.	Proctor
§Dickson, T. H.	St. Paul
§Diehl, H. S.	Minneapolis
Diessner, G. R.	Rochester
Diessner, H. D.	Minneapolis
Dille, D. E.	Litchfield
Dille, R. S.	Rochester
§*Dittman, G. C.	St. Paul
§Dittrich, R. J.	Duluth
§Dixon, C. F.	Rochester
§Dockerty, M. B.	Rochester
Dodds, W. C.	Thief River Falls
Doehring, P. C., Jr.	Boston, Mass.
§Doherty, E. M.	New Prague
Dolder, F. C.	Eyota
Doman, V. W.	Lakefield
§Domeier, L. H.	New Ulm
Doms, H. C. A.	Slayton
§Donaldson, C. S.	Foley
‡Donoghue, F. E.	Rochester
Donohue, P. F.	St. Paul
Donovan, D. L.	Albert Lea
§Doolittle, L. E.	Duluth
§Dordal, J.	Sacred Heart
§Dorge, R. I.	Minneapolis
§Dornberger, G. R.	Rochester
§Dornblaser, H. B.	Minneapolis
§Dorsey, G. C.	Minneapolis
Douglas, J. M.	Rochester
Douglass, B. E.	Rochester
Dovre, C. M.	St. Paul
Dowidat, R. W.	Minneapolis
§Doswell, W. J.	Kerkhoven
Doxey, G. L.	Minneapolis
Doyle, G. C.	Duluth
§Doyle, L. O.	Minneapolis
§Drake, C. B.	St. Paul
§Drake, C. R.	Minneapolis
†Drake, F. A.	Lanesboro
Dredge, H. P.	Sandstone
Drexler, G. W.	Blue Earth
§Drill, H. E.	Hopkins
Drips, Della G.	Rochester
§Drought, W. W.	Fergus Falls
‡Drumheller, J. F.	Rochester
§Dry, T. J.	Rochester
§Dubbe, F. H.	New Ulm
DuBois, J. F.	Sauk Centre
§Duff, E. R.	Minneapolis
§Dukelow, D. A.	Minneapolis
DuMais, A. F.	Rochester
†Dumas, A. G.	Minneapolis
Duncan, J. W.	Moorhead
§Dungay, N. S.	Northfield
§Dunlap, E. H.	Minneapolis
§Dunn, G. R.	Minneapolis
§Dunn, J. H.	Rochester
§Dunn, J. N.	St. Paul
§DuPont, J. A.	Excelsior
§Duryea, W. M.	Minneapolis
†Dutton, C. E.	Minneapolis
§Dvorak, B. A.	Minneapolis
§Dwan, P. F.	Minneapolis
§Dworsky, S. D.	Minneapolis
§Dysterheft, A. F.	Gaylord

§Earl, G. A.	St. Paul
§Earl, I. R.	St. Paul
Earl, Robert	St. Paul
§Eaton, L. M.	Rochester
Eberley, T. S.	Benson
§Eberlin, E. A.	Glenwood
Ebert, R. V.	Minneapolis
Eckdale, J. E.	Marshall
§Eckman, P. F.	Duluth
§Eckman, R. J.	Duluth
Eckstam, E. E.	Rochester
§*Ederer, J. J.	Minneapolis
§Edlund, Gustaf	St. Paul
Edwards, Jessie E.	Rochester
Edwards, J. W.	St. Paul
†Edwards, R. T.	Big Fork, Mont.
§Edwards, T. J.	St. Paul
Eger, Alban	Rochester
Eginton, C. T.	St. Paul
§Ehrenberg, C. J.	Minneapolis
§Ehrlich, S. P.	Minneapolis
§Eich, Matthew	Minneapolis
Eiler, John	Park Rapids
Eisenstadt, D. H.	Minneapolis
Eisenstadt, W. S.	Minneapolis
§Eitel, G. D.	Minneapolis
§Ekblad, J. W.	Duluth
§Ekstrand, L. M.	Wabasha
§Elias, F. J.	Duluth
§Elkins, E. C.	Rochester
Ellingson, A. R.	Detroit Lakes
Elliott, R. B.	Rochester
§Ellis, E. W.	Elgin
‡Ellis, F. H.	Rochester
Ellison, A. B. C.	Rochester
§Ellison, D. E.	Minneapolis
§Ellison, F. E.	Monticello
§Elsey, E. M.	Glenwood
Elsey, J. R.	Glenwood
Ely, O. S.	So. St. Paul
§Emanuel, K. W.	Duluth
§Emerson, E. C.	St. Paul
§Emerson, E. E.	Osakis
Emerson, G. F.	Rochester
§Emmett, J. L.	Rochester
Emond, A. J.	Farmington
Emond, J. S.	Farmington
§Endress, E. K.	St. Paul
§Engberg, E. J.	Faribault
§Engelhart, P. C.	Minneapolis
Englund, E. F.	Minneapolis
§Engstrand, O. J.	Minneapolis
Engstrom, G. F.	Belgrade
Enroth, O. E.	St. Paul
Eppard, R. M.	Cloquet
§Erich, J. B.	Rochester
§Erickson, A. O.	Long Prairie
Erickson, C. O.	Minneapolis
Erickson, D. J.	Minneapolis
§Erickson, Eskil	Halstad
§Erickson, R. E.	Hector
§Erickson, R. F.	Minneapolis
§Ericson, R. M.	Minneapolis
§Ericson, Swan	Le Sueur
Ernest, G. C. H.	So. St. Paul
Ersfeld, M. P.	St. Paul
Erskine, G. M.	Grand Rapids
Ertel, E. Q.	Ellendale
†Eshelby, E. C.	St. Paul
Esser, John	Perham
§Esser, O. J.	New Ulm
§Estes, J. E.	Rochester
§Estrem, C. O.	Fergus Falls
§Estrem, R. D.	Fergus Falls
§Estrem, T. A.	Hibbing
§Eusterman, G. B.	Rochester
§Evans, E. T.	Minneapolis
§Evans, L. M.	Sauk Rapids
Evans, R. D.	Minneapolis
†Evarts, A. B.	Rochester
Evert, J. A.	St. Paul
Ewens, H. B.	Virginia
Eyres, T. E.	Pequot

§Faber, J. E.	Rochester
§Faber, W. M.	Rochester
†Fahey, E. W.	St. Paul
Fahr, G. E.	Minneapolis
Fair, E. E.	Rochester
Fait, R. V.	Little Falls
§Fansler, W. A.	Minneapolis
Farber, E. M.	Rochester
†Farkas, J. V.	Minneapolis
†Farsht, I. J.	Minneapolis
Faulconer, Albert, Jr.	Rochester
§Fawcett, A. M.	Renville
§Fawcett, K. R.	Duluth
Fawcett, R. M.	Rochester
Fearing, J. E.	Virginia
Feeney, J. M.	Minneapolis
§Feinstein, J. Y.	Minneapolis
§Feldman, F. M.	Rochester
§Fellows, M. F.	Duluth
Fenger, E. P. K.	Oak Terrace
§Ferguson, J. C.	St. Paul
Ferguson, W. C.	Walnut Grove
Ferguson, W. J., Jr.	Rochester
‡Ferguson, W. J.	Rochester
Ferrell, C. R.	Grand Rapids
§Ferris, D. O.	Rochester
‡Ferris, H. A., Jr.	Rochester
§Fensenmaier, O. B.	New Ulm
§Fesler, H. H.	St. Paul
§Fetterly, Warren	Minneapolis
Field, A. H.	Farmington
§Figi, F. A.	Rochester
Fink, D. L.	St. Paul
§Fink, L. W.	Minneapolis
§Fink, W. H.	Minneapolis
Fisch, H. M.	Austin
§Fischer, M. McC.	Duluth
Fisher, Isadore	St. Paul
Fisher, J. M.	Willmar
Fisher, R. L.	Rochester
Fisketti, Henry	Duluth
†Fitzgerald, D. F.	Minneapolis
Fitzgerald, E. T.	Morris
§Fitzgibbons, R. J.	Rochester
§Fitzsimons, W. E.	Brainerd
§Fjeldstad, C. A.	Minneapolis
§Flanagan, H. F.	St. Paul
§Flanagan, L. G.	Austin
§Flasher, Jack	Rochester
§Flashman, F. L.	Rochester
Fleeson, W. H.	Minneapolis
§Fleming, T. N.	St. Cloud
§Flesche, B. A.	Lake City
Fletcher, Mary E. H.	Rochester
Flickinger, F. M.	Lima, Ohio
Flink, E. B.	St. Paul
§Flinn, J. H.	Rochester
Flinn, T. E.	Redwood Falls
§Flom, M. G.	Zumbrota
Flynn, B. F.	Hibbing
‡Foerster, J. M.	Rochester
‡Fogarty, C. W., Jr.	Rochester
Fogarty, C. W.	St. Paul
§Fogelberg, E. J.	St. Paul
§Foker, L. W.	Minneapolis
§Foley, F. E. B.	St. Paul
§Folken, F. G.	Albert Lea
§Ford, B. C.	Marshall
§Ford, W. H.	Minneapolis
§Forney, R. A.	Rochester
*Foshager, H. T.	Clara City
Foss, E. L.	Rochester
Foster, W. K.	Minneapolis
§Fowler, L. H.	Minneapolis
Fox, James R.	Minneapolis
§Franchere, F. W.	Lake Crystal
Francis, D. W.	Morristown
Frane, D. B.	Minneapolis
Frank, J. E.	Marshall
Frank, W. L., Jr.	Minneapolis
Frear, Rosemary R.	Minneapolis
§Fredericks, G. M.	Minneapolis
Frederickson, Alice C.	Wilmar
Frederickson, G. U. Y.	Willmar
§Fredlund, M. L.	Minneapolis
§Fredricks, M. G.	Duluth
Freeman, C. D.	St. Paul
Freeman, G. H.	St. Peter
Freidman, L. L.	St. Paul
§Freligh, W. P.	Albert Lea
§Fricke, R. E.	Rochester
§Fried, L. A.	Minneapolis
§Friedell, Aaron	Minneapolis
Friedell, George	Ivanhoe
Friefeld, Saul	Wadena
Friend, A. W.	Minneapolis
§Friesleben, William	Sauk Rapids
Frisch, F. P.	Wilmar
§Fritsche, Albert	New Ulm
§Fritsche, C. J.	New Ulm
§Fritsche, T. R.	New Ulm
Fritz, W. L.	St. Paul
§Froats, C. W.	St. Paul
§Frost, E. H.	Willmar
*Frost, H. T.	Wadena
Frost, J. B.	Minneapolis
Frost, R. H.	St. Paul
Fryfogle, J. D.	Rochester
Frykman, H. M.	Minneapolis
Fugina, G. R.	Mankato
Fuller, Alice H.	Minneapolis
§Funk, V. K.	Oak Terrace

§Gaarde, F. W.	Rochester
§Gaarde, F. W., Jr.	Rochester
§Gaida, J. B.	St. Cloud
§Gaines, E. C.	Buffalo Lake
§Gallagher, B. J.	Waseca
Galligan, Margaret M. D.	Minneapolis
§Galloway, J. B.	Minneapolis
§Gambill, E. E.	Rochester
Gamble, J. W.	Albert Lea
§Gamble, P. M.	Albert Lea
§Gammell, J. H.	Minneapolis
§Garbrecht, A. W.	St. Paul
Gardiner, D. G.	St. Paul
Gardner, V. H.	Fairmont
§Gardner, W. P.	St. Paul
Garlock, A. V.	Bemidji
Garlock, D. H.	Bemidji
Garrow, D. M.	St. Paul
Garten, J. L.	Minneapolis
Garthe, J. J.	St. Paul
Gastineau, C. F.	Rochester
§Geer, E. K.	St. Paul
§Gehlen, J. N.	St. Paul
§Geist, G. A.	St. Paul
Gendron, J. F.	Grand Rapids
Gentling, A. A.	Rochester
Gentry, R. W.	Rochester
Gerber, M. P.	Brainerd
Gericke, J. T., Jr.	Glenwood
§Ghent, C. H.	St. Paul
§Ghormley, R. K.	Rochester
Ghostley, Mary C.	Puposky
§Gibbons, F. C.	Comfrey
Gibbs, E. C.	St. Paul

Gibbs, R. W. .... Minneapolis
Gibson, R. H. .... Rochester
§Giebenhain, J. N. ...... Minneapolis
§Giere, J. C. .... Minneapolis
§Giere, R. W. .... Minneapolis
Giere, S. W. .... Benson
§Giesen, A. F. .... Starbuck
†Giessler, P. W. .... Minneapolis
‡Giffin, H. M. .... Rochester
§Giffin, H. Z. .... Rochester
Giffin, Mary E. .... Rochester
Gilbert, M. G. .... Minneapolis
†Gilfillan, J. S. .... St. Paul
Gilkey, S. E. .... St. Paul
*§Gilles, F. L. .... Minneapolis
Gillespie, D. R. .... St. Paul
§Gillespie, M. G. .... Duluth
Gilman, L. C. .... Willmar
Gilmore, Rowland .... Bemidji
Gingold, B. A. .... Minneapolis
†Ginsberg, William .... St. Paul
§Giroux, A. A. .... No. Mankato
§Girvin, R. B. .... Minneapolis
§Gjerde, W. P. .... St. Paul
Glabe, R. A. .... Plainview
Gleason, W. A. .... St. Paul
§Glenn, W. V. .... Rochester
Glover, R. P. .... Rochester
§Goblirsch, A. P. .... Sleepy Eye
Goehrs, G. H. .... St. Cloud
Goehrs, H. W. .... St. Cloud
§Goldberg, I. M. .... Minneapolis
‡Golden, P. B. .... Rochester
Golden, R. F. .... Rochester
§Goldish, D. R. .... Duluth
§Goldman, T. I. .... Minneapolis
Goldner, M. Z. .... Minneapolis
§†Goltz, E. V. .... St. Paul
§Good, C. A., Jr. .... Rochester
§Good, H. D. .... Minneapolis
§Goodman, C. E. .... Virginia
Gordon, N. F. .... Rochester
Gordon, P. E. .... Minneapolis
Gorsuch, M. T. .... Rochester
Goss, H. C. .... Glencoe
Goss, Martha D. .... Glencoe
§Gowan, L. R. .... Duluth
Graham, A. W. .... Chisholm
§Graham, F. M. .... Rochester
Graham, R. B. .... Rochester
Graham, R. J. .... Rochester
§Grahek, J. P. .... Ely
Gramse, A. E. .... Rochester
Grant, H. W. .... St. Paul
Grant, J. C. .... Sauk Center
Gratzek, F. R. E. .... Minneapolis
§Gratzek, Thomas .... St. Paul
§Grau, R. K. .... St. Paul
§Grave, Floyd .... Minneapolis
§Graves, R. B. .... Red Wing
§Graves, W. N. .... Duluth
Gray, F. D. .... Marshall
§Gray, H. K. .... Rochester
Gray, R. C. .... Minneapolis
Green, R. G. .... Minneapolis
Greene, L. F. .... Rochester
§Greenfield, W. T. .... Delano
Gridley, J. W. .... Glencoe
Griess, D. F. .... Rochester
Griffin, J. G. .... Rochester
§Grimes, B. P. .... St. Peter
*Grimes, H. B. .... Madelia
Grimes, Marian .... Minneapolis
§Grindlay, J. H. .... Rochester
Grinley, A. V. .... Grand Rapids
§Grise, W. B. .... Austin
Grogan, J. M. .... Ceylon
Grogan, J. S. .... Wadena
§Gronvall, P. R. .... Minneapolis
§Groom, Dale .... Rochester
Groschupf, T. P. .... Bemidji
Grose, F. N. .... Clarissa
Groskloss, H. H. .... Minneapolis
Gross, J. B. .... Rochester
§Grotting, J. K. .... Rochester
Grugenhagen, A. P. .... St. Paul
Grundset, O. J. .... Montrose
‡Guernsey, D. E. .... Rochester
Guilbert, G. D. .... Wood, Wis.
Guilfoile, P. J. .... Delano
Gullingsrud, M. J. O. .... Oregon
Gullixson, Andrew .... Albert Lea
§Gully, R. J. .... Cambridge
*Gunderson, N. A. .... Minneapolis
§Gushurst, E. G. .... Minneapolis
§Gustason, H. T. .... Minneapolis

§Habein, H. C. .... Rochester
Haberer, Helen R. .... Minneapolis
Haberman, Emil .... Osakis
§Haes, J. E. .... Mankato
§Hagedorn, A. B. .... Rochester
Hagen, O. J. .... Moorhead
Hagen, P. S. .... Minneapolis
§Hagen, W. S. .... Minneapolis
†Haggard, G. D. .... Minneapolis
Haight, G. G. .... Audubon
§†Haines, J. H. .... Stillwater
‡Haines, R. D. .... Rochester
§Haines, S. F. .... Rochester
Halenbeck, P. L. .... St. Cloud
†Hall, A. R. .... St. Paul
§Hall, B. E. .... Rochester
Hall, G. H., Jr. .... Minneapolis
Hall, H B. .... Minneapolis
Hall, H. H. .... St. Paul
*Hall, J. M. .... Minneapolis
§Hall, W. E. .... Maple Lake
Hall, W. H. .... Minneapolis
§Halladay, G. J. .... Brainerd
Hallberg, C. A. .... Minneapolis
§Hallberg, O. E. .... Rochester
§Hallenbeck, D. F. .... Rochester
§Hallenbeck, G. A. .... Rochester
§Hallin, R. P. .... Worthington
Halme, W. B. .... Cloquet
Halloran, W. H. .... Jackson
§Halpern, D. J. .... Brewster
§Halpin, J. E. .... Rush City
§*Hamel, A. L. .... Minneapolis
Hamilton, C. F. .... Rochester
§Hamlin, G. B. .... Minneapolis
§Hamlon, J. S. .... St. Charles
‡Hamm, R. S. .... Rochester
§Hammermeister, T. F. .... New Ulm
§†Hammerstad, L. M. .... Minneapolis
§Hammes, E. M. .... St. Paul
Hammes, E. M., Jr. .... Rochester
Hammond, A. J. H. .... Minneapolis
Hammond, J. F. .... St. Paul
Haney, C. L. .... Duluth
Hankerson, R. G. .... Minnesota Lake
Hanlon, G. H. .... Rochester
§Hannah, H. B. .... Minneapolis
Hanover, R. D. .... Littlefork
Hansbro, G. L. .... Rochester
§Hansen, C. O. .... Minneapolis
§Hansen, E. W. .... Minneapolis
Hansen, Olga S. .... Minneapolis
Hansen, T. M. .... Alden
§Hanson, A. M. .... Faribault
§Hanson, E. O. .... Cloquet
Hanson, E. C. .... New York Mills
§Hanson, H. J. .... Minneapolis
§Hanson, H. B. .... St. Paul
Hanson, H. V. .... Minneapolis
§Hanson, J. W. .... Northfield
Hanson, Lewis .... Frost
§Hanson, M. B. .... Minneapolis
Hanson, N. O. .... Rochester
§Hanson, W. A. H. .... Minneapolis
§Happe, L. J. .... Minneapolis
Hare, Helen J. .... Rochester
§Hargraves, M. M. .... Rochester
§Harmon, G. E. .... St. Paul
Harper, Harry P. .... Rochester
Harriman, Leonard .... Howard Lake
§Harrington, C. D. .... Minneapolis
*§†Harrington, F. E. .... Minneapolis
§Harrington, S. W. .... Rochester
§Harris, C. N. .... Hibbing
§Harrison, P. W. .... Worthington
‡Hart, G. M. .... Rochester
§Hart, V. L. .... Minneapolis
§Hart, W. E. .... Monticello
§Hartfiel, W. F. .... St. Paul
§Hartig, Hermina A. .... Minneapolis
Hartig, Marjorie .... St. Paul
§Hartigan, J. D. .... Rochester
§Hartley, E. C. .... St. Paul
§Hartman, H. R. .... Rochester
Hartman, Jack .... Soudan
§Hartnagel, G. F. .... Red Wing
§Hartung, E. H. .... Claremont
§†Hartzell, T. B. .... Minneapolis
Harvey, George, Jr. .... Rochester
§Haskell, A. D. .... Alexandria
§Hassett, M. F. .... St. Paul
§Hassett, R. G. .... Mankato
Hasskarl, W. F. .... Rochester
§Hastings, D. R. .... Minneapolis
Hastings, D. W. .... Minneapolis
Hatch, W. E. .... Duluth
Hatcher, A. C. .... Rochester
Hathaway, S. J. .... Tacoma, Wash.
Hauge, E. T. .... Minneapolis
§Hauge, M. I. .... Clarkfield
Haugen, J. A. .... Minneapolis
§Hauser, V. P. .... St. Paul
§Havel, H. W. .... Jordan
§Haven, W. K. .... Minneapolis
§Havens, F. Z. .... Rochester
§Havens, J. G. W. .... Austin
§Hawkinson, R. P. .... Minneapolis
§Hayes, A. F. .... St. Paul
§Hayes, J. M. .... Minneapolis
Hayes, M. F. .... Nashwauk
§Haynes, A. L. .... Rochester
Hays, A. T. .... Minneapolis
§Head, D. P. .... Minneapolis
§Head, G. D. .... Minneapolis
Headley, N. E. .... Rochester
Healy, R. T. .... Pierz
Hebbel, Robert .... Minneapolis
Hebeisen, M. B. .... Chaska
§Heck, F. J. .... Rochester
§Heck, W. W. .... St. Paul
Hedback, A. E. .... Minneapolis
§Hedberg, G. A. .... Nopeming
Hedemark, H. H. .... Ortonville
Hedemark, T. A. .... Ortonville
Hedenstrom, F. G. .... St. Paul
§Hedenstrom, L. H. .... Cambridge
§Hedin, R. F. .... Red Wing
§Heersema, P. H. .... Rochester
Hegge, O. H. .... Austin
§Hegge, R. S. .... Austin
Heiam, W. C. .... Cook
§Heiberg, E. A. .... Fergus Falls
§Heiberg, O. M. .... Worthington
Heilman, F. R. .... Rochester
§Heim, R. R. .... Minneapolis
Heimark, J. J. .... Fairmont
Heinrich, W. A. .... Rochester
§Heise, Herbert .... Winona
§Heise, Paul .... Winona
§†Heise, W. F. C. .... Winona
§Heise, W. V. .... Winona
Helferty, J. K. .... Minneapolis
†Helland, G. M. .... Spring Grove
§Helland, J. W. .... Spring Grove
§Helmholz, H. F. .... Rochester
§Helseth, H. K. .... Fergus Falls
§Hempstead, B. E. .... Rochester
†Hemstead, Werner .... Fergus Falls
§Hench, P. S. .... Rochester
§‡Henderson, E. D. .... Rochester
Henderson, A. J. G. .... St. Paul
§Henderson, J. W. .... Rochester
‡Henderson, L. L. .... Rochester
§Henderson, M. S. .... Rochester
Hendricks, E. J. .... Verndale
†Hendrickson, J. F. .... Minneapolis
Hendrickson, R. R. .... Lake Park
§Henegar, G. C. .... Rochester
Hengstler, W. H. .... St. Paul
Henkel, H. B. .... Rochester
§Henney, W. H. .... McIntosh
§Henrikson, E. C. .... Minneapolis
Henry, C. J. .... Milaca
†Henry, C. E. .... Kirksville, Mo.
Henry, M. O. .... Minneapolis
§Hensel, C. N. .... St. Paul
Henslin, A. E. .... Le Roy
Henslin, M. E. .... Le Roy
Herbert, W. L. .... Minneapolis
§Herbst, R. F. .... Wykoff
Herman, S. M. .... St. Paul
§Hermanson, P. E. .... Hendricks
§Heron, R. C. .... St. Paul
§Herrell, W. E. .... Rochester
§Herrmann, E. T. .... St. Paul
§Hertel, G. E. .... Austin
Hertz, M. J. .... St. Paul
Hertzog, A. J. .... Minneapolis
Hewitt, Edith S. .... Rochester
†Hewitt, R. M. .... Rochester
†Heyerdale, O. C. .... Rochester
Heyerman, O. T. .... Rochester
Higgins, J. H. .... Minneapolis
Higgins, R. S. .... Rochester
Higginson, J. F. .... Rochester
Hightower, N. C., Jr. .... Rochester
§Hilding, A. C. .... Duluth
§Hilger, A. W. .... St. Paul
†Hilger, D. D. .... St. Paul
§Hilger, J. A. .... St. Paul
§Hilger, L. D. .... St. Paul
§Hilger, L. A. .... St. Paul
*†Hill, Eleanor J. .... Minneapolis
Hill, F. E. .... Duluth
§Hill, J. R. .... Rochester
§Hillis, S. J. .... Minneapolis
§Hilton, H. D. .... Rochester
Hinckley, R. G. .... Minneapolis
§Hines, E. A., Jr. .... Rochester
Hiniker, L. P. .... St. Paul
§Hiniker, P. J. .... Le Sueur
§Hinshaw, H. C. .... Rochester
§Hinz, W. T. .... Bird Island
Hirschboeck, F. J. .... Duluth
§Hirshfield, F. R. .... Minneapolis
§Hitchings, W. S. .... Lakefield
†Hoaglund, A. W., Santa Monica, Calif.
§Hochfilzer, J. J. .... St. Paul
Hodapp, R. J. .... Willmar
§Hodge, S. V. .... Minneapolis
§Hodgson, C. H. .... Rochester
Hodgson, J. R. .... Rochester
§Hoeper, P. G. .... Mankato
§Hoff, Alfred .... St. Paul
§Hoff, H. O. .... Duluth

†Hoffbauer, F. W. ....Minneapolis
§Hoffert, H. E............Minneapolis
§Hoffman, R. A...........Minneapolis
§Hoffman, W. L..........Minneapolis
§Hoidale, A. D..................Tracy
Holcomb, J. T....Marine-on-St. Croix
Holcomb, O. W............St. Paul
*†Holl, P. M..............Minneapolis
Hollenhurst, R. W.........Rochester
Hollands, W. H................Fisher
Hollinshead, W. H. ....St. Paul
Holm, H. H..................Glencoe
†Holm, P. F..........§........Wells
§Holmberg, C. J..........Minneapolis
Holmberg, L. J.................Canby
§Holmen, R. W..............St. Paul
Holmes, A. E..............Rush City
§Holmes, C. L..............Rochester
Holmstrom, C. H.............Warren
§Holt, J. E....................St. Paul
§Holt, R. P...............Rochester
Holtan, Theodore.........Waterville
Holzapfel, F. C...........Minneapolis
§Hoon, J. R. ....Rochester
Hopkins, G. W..............St. Paul
§Hoppes, E. E. ....Rochester
§Horan, M. J...............Rochester
§Horton, B. T..............Rochester
§Horns, Richard..........Minneapolis
Hosfeld, S. Marjorie........Rochester
§Hottinger, R. C...........Janesville
Houkom, Bjarne.........Minneapolis
§Houkom, S. S.................Duluth
†House, Z. E..............Cass Lake
Houston, D. M..........Park Rapids
§Hovde, Rolf................Winthrop
Hovland, M. L...........Minneapolis
§Howard, E. G. ....Mapleton
§Howard, M. I...............Mankato
Howard, M. A...............St. Paul
Howard, S. E. ....Minneapolis
Howard, W. S...............St. Paul
§Howell, L. P..............Rochester
Hoyer, L. J...................Windom
§Hubbard, O. E...............Brainerd
Hubin, E. G. ....Swanville
Hudec, E. R.......................Echo
Hudson, G. E............Minneapolis
§Huenekens, E. J.........Minneapolis
§Huffington, H. L...........Mankato
Hughes, T. J...............Rochester
§Hullsiek, H. E..............St. Paul
§Hullsiek, R. B..............St. Paul
Hultgen, W. J................St. Paul
§Hultkrans, J. C..........Minneapolis
Hultkrans, R. E..........Minneapolis
Humphrey, E. W..........Moorhead
Humphrey, W. R..........Stillwater
§Hunt, A. B................Rochester
Hunt, R. C...................Fairmont
Hunt, R. S...................Fairmont
Hunt, V. W. ....Rochester
Hunte, A. F........Alhambra, Calif.
Hurd, Annah...........Minneapolis
Hurley, J. P...............Rochester
Hurwitz, M. M.............St. Paul
Hutchins, S. P.............Rochester
§‡Hutchinson, C. J.........Minneapolis
Hutchinson, D. W.......Oak Terrace
Hutchinson, Henry.......Moose Lake
Huxley, F. R................Faribault
§Hymes, Charles..........Minneapolis
§Hynes, J. E.............Minneapolis

Iams, A. M. ....Minneapolis
§Ide, A. W....................St. Paul
Ikeda, Kano..................St. Paul
Ingebrigtson, E. K. G......Moorhead
Ingerson, C. A...............St. Paul
Irmisch, G. W. ....Rochester
Irons, W. E................Rochester
Irvine, H. G.............Minneapolis
‡Iverson, H. A. ....Rochester
§Iverson, R. M. ....Minneapolis
Ivins, J. C. ....Rochester

§Jackman, R. J.............Rochester
*†Jackson, C. M..........Minneapolis
§Jackson, H. S.............Rochester
§Jacobs, D. L.................Willmar
Jacobs, G. C............Fergus Falls
Jacobs, J. C. ....Willmar
Jacobson, Clarence ....Chisholm
§Jacobson, C. W.........Breckenridge
§Jacobson, F. C. ....Duluth
James, E. M.......Washington, D. C.
Jamieson, E. F...............Brainerd
Janecky, A. G. ....Warroad
Janes, J. M................Rochester
Janssen, M. E...............St. Paul
‡Jennings, D. T. ....Rochester
Jensen, A. M...............Brownton
§Jensen, H. C............Minneapolis
§†Jensen, M. J............Minneapolis

Jensen, N. K. ....Minneapolis
Jensen, R. A. ....Minneapolis
§Jensen, T. J....................Duluth
Jesion, J. W..................St. Paul
†Jerome, Bourne ....Minneapolis
§Jeronimus, H. J...............Duluth
§Jessico, C. M.................Duluth
§Joffe, H. H. ....Duluth
§Johanson, W. G.............St. Paul
Johns, Sylvia ....Rochester
§Johnson, A. B...........Minneapolis
Johnson, A. E...........Minneapolis
Johnson, A. E............Red Wing
§Johnson, A. M. ....St. Paul
§Johnson, B. H. ....Rochester
Johnson, C. C.............Rochester
†Johnson, C. E............Pine River
Johnson, C. E...............St. Paul
*Johnson, C. M...............Dawson
Johnson, C. P. ....Tyler
§Johnson, C. R.............Rochester
Johnson, D. L. ....Little Falls
Johnson, E. W...............Bemidji
Johnson, E. W...........Minneapolis
Johnson, Evelyn V. ....Minneapolis
Johnson, H. C.......Thief River Falls
Johnson, Hans............Kerkhoven
§Johnson, H. A..........Minneapolis
§Johnson, H. C........North Mankato
§Johnson, H. E...........Bird Island
Johnson, J. A................St. Paul
§Johnson, J. A............Minneapolis
†Johnson, J. W........St. Louis Park
§Johnson, Julius.........Minneapolis
§Johnson, K. E..................Duluth
Johnson, M. A., III ......Rochester
§Johnson, M. R..........Minneapolis
†Johnson, N. A. ..Santa Monica, Calif.
Johnson, N. P..........Minneapolis
Johnson, N. T...........Minneapolis
Johnson, O. H.........Redwood Falls
Johnson, Olga H...........Moorhead
Johnson, O. V..........Fergus Falls
Johnson, R. B.............Lanesboro
Johnson, R. G..............Stillwater
Johnson, Reuben A.......Minneapolis
Johnson, R. E.............Crookston
Johnson, R. E. ....Minneapolis
Johnson, R. M. ....Slayton
§Johnson, V. M...............Dawson
Johnson, W. E...............Morgan
Johnson, Y. T...........Minneapolis
Johnsrud, L. W.............Chisholm
§Johnston, L. F...............Winona
Jolin, F. M.....................Bovey
Jondahl, W. H. ....Rochester
†Jones, A. W...............Red Wing
Jones, E. M..................St. Paul
Jones, H. W., Jr.........Minneapolis
§Jones, O. H..................Mankato
§Jones, R. H. ....Rochester
§Jones, R. N.................St. Cloud
§Jones, W. R.............Minneapolis
†Jordan, Kathleen.......Granite Falls
Jordan, L. S...........Granite Falls
Josewich, Alexander.....Minneapolis
§Josewski, R. J.............Stillwater
§Joss, C. S.................Rochester
§Judd, E. S., Jr............Rochester
§Judd, W. H......Washington, D. C.
§Juergens, H. M..........Belle Plaine
§Juers, E. H................Red Wing
§Juliar, R. O. ....St. Clair
§Jurdy, M. J............Minneapolis

Kabler, P. W............Minneapolis
Kabrick, O. A.................Jackson
Kalin, O. T..............Minneapolis
Kallestad, L. L. ....Brownton
§Kamman, G. R..............St. Paul
Kamp, B. A...............Albert Lea
Kaplan, D. H.................St. Paul
Kaplan, J. J. ....Minneapolis
Kapsner, Carl ....Princeton
Karleen, B. N. ....Jackson
Karleen, C. I............Minneapolis
Karlstrom, A. E.........Minneapolis
§Karn, B. R..............Ortonville
§Karn, J. F................Ortonville
Karon, I. M..................St. Paul
Karstens, H. C. ....Rochester
§Kasper, E. M................St. Paul
§Kath, R. H..............Wood Lake
Katzovitz, Hyman...........St. Paul
Kaufman, E. J..............Appleton
§Kaufman, H. J..........Minneapolis
§Kaufman, W. B.............Mankato
Kaufman, W. C............Appleton
§Kearney, R. W.............Mankato
§Keating, F. R., Jr..........Rochester
§Keating, J. U. ....Rochester
Keefe, R. E...................St. Paul
Keeley, J. K... ....Rochester
Keffer, W. H. ....Rochester

§Keith, H. M...............Rochester
§Keith, N. M...............Rochester
§Keithahn, E. E..... . ...Sleepy Eye
§Kelby, G. M.............Minneapolis
Kelley, K. J. ....Big Fork
§Kelly, J. F. ....Cold Springs
Kelly, J. P. ....Minneapolis
§Kelly, J. V....................St. Paul
Kelly, P. H....................St. Paul
§Kelsey, C. G...............Hinckley
Kelsey, C. M.................St. Paul
Kelsey, M. P. ....Rochester
§Kemp, A. F..................Mankato
Kemp, M. W................Alton, Ill.
Kemper, C. M.............Rochester
Kendall, R. F.................St. Paul
§Kenefick, E. V...............St. Paul
§Kennedy, C. C...........Minneapolis
Kennedy, G. L. ....Faribault
Kennedy, Jane F.........Minneapolis
§Kennedy, R. L. J...........Rochester
Kennedy, T. J..............Rochester
§Kennedy, W. A..............St. Paul
Kenyon, T. J. ....St. Paul
§Kepler, E. J................Rochester
§Kerkhof, A. C...........Minneapolis
Kern, C. E................Rochester
§Kernohan, J. W............Rochester
Kertesz, G...............Minneapolis
§Kesting, Herman............St. Paul
Kettlewell, R. B.........Sauk Centre
Keyes, J. D.................Winona
§Kierland, P. E...........Alexandria
§Kierland, R. R.............Rochester
§Kiernan, P. C..............Rochester
§Kilbride, E. A..........Worthington
†Kilbride, J. S. ....Worthington
§Kimmel, G. C., Jr..........Red Wing
†King, E. A.................Hennepin
King, F. W..............Oak Terrace
King, G. L....................St. Paul
*Kingsbury, E. M........Moose Lake
§Kinsella, T. J...........Minneapolis
Kinsport, E. B. ..International Falls
§Kirby, J. L...............Rochester
Kirk, G. P.........East Grand Forks
Kirkland, W. G.............Rochester
§Kirklin, B. R. ....Rochester
§Kirklin, O. L...............Rochester
§Kistler, A. J............Minneapolis
§†Kistler, C. M...........Minneapolis
Kleifgen, G. V. H. ....St. Paul
Klein, A. D..................Chisholm
§Klein, Harry...................Duluth
§Klein, H. N..................St. Paul
Klein, J. C..................Shakopee
§Klima, W. W................Stewart
Klontz, C. E., Jr...........Rochester
§Knapp, F. N...................Duluth
§Knapp, M. E............Minneapolis
§†Knauff, M. K. ....St. Paul
Knight, E. G. ....Swanville
Knight, R. R. ....Minneapolis
§Knight, R. T. ....Minneapolis
‡Knisely, R. M. ....Rochester
§Knoll, W. V. ....Duluth
Knutson, G. A. ....Hallock
Knutson, G. E. ....St. Paul
‡Knutson, J. R. B. ....Rochester
§Knutson, L. A. ....Spring Grove
§Koelsche, G. A. ....Rochester
§Koenigsberger, Charles .....Mankato
§Koepcke, G. M. ....Minneapolis
§Kohlbry, C. O. ....Duluth
Kohler, D. W. ....St. Joseph
Kolars, J. J. ....Faribault
Koller, H. M. ....Minneapolis
Koller, L. R. ....Minneapolis
§Koop, S. H. ....Richmond
Korchik, J. P. ....Minneapolis
§Kortsch, F. P. ....Prior Lake
Koschnitzke, H. K. ....Minneapolis
§Kostick, W. R. ....Fertile
Kotchevar, F. R. ....Eveleth
§Koucky, R. W. ....Minneapolis
Krause, C. W. ....Fairmont
Kreilkamp, B. L. ....Rochester
Kreuzer, T. C. ....Marshall
§Krueger, V. R. ....Nopeming
§Kruzick, S. J. ....Sleepy Eye
§Krusen, F. H. ....Rochester
Kucera, F. J. ....Hopkins
§Kucera, S. T. ....Lonsdale
§Kucera, W. J. ....Minneapolis
§Kugler, A. A. ....St. Paul
Kuhlman, L. B. ....Melrose
Kurtin, H. J. ......Blooming Prairie
Kurzweg, F. T. ....Rochester
Kuske, A. W. ....St. Paul
§Kusske, A. L. ....New Ulm
§Kvale, W. F. ....Rochester
Kvitrud, Gilbert ....St. Paul

§LaBree, R. H. ....Duluth
Lagaard, S. M...........Minneapolis
Laikola, L. A. ....Adrian
§Laird, A. T. ....Duluth
Lajoie, J. M. ....Minneapolis
§Lake, C. F. ....Rochester
§Lampert, E. G. ....Rochester
Landry, R. M. ....Rochester
§Lang, L. A. ....Minneapolis
Langhoff, A. H. ....St. Peter
§Lannin, B. G. ....St. Paul
§Lannin, J. C. ....Mabel
§Lapierre, A. P. ....Minneapolis
§Lapierre, J. T. ....Minneapolis
Large, H. R. ....Rochester
Larrabee, W. F., Jr. ......Rochester
§Larsen, C. L. ....St. Paul
Larsen, F. W. ....Minneapolis
Larson, Arnold ......Detroit Lakes
§Larson, C. M. ....Minneapolis
Larson, E. A. ....Minneapolis
Larson, Eva-Jane ....St. Paul
Larson, J. T. ....St. Paul
§Larson, L. M. ....Minneapolis
§Larson, Leonard M. ....Oak Terrace
Larson, Leroy............Bagley
§Larson, M. H. ....Nicollet
§Larson, P. N. ....Minneapolis
Larson, R. H. ....Anoka
§Latterell, K. E. ....Rochester
Lauer, D. J. ....Pittsburgh, Pa.
Laughlin, J. T. ....Grey Eagle
§La Vake, R. T. ......Minneapolis
Law, S. G. ....Minneapolis
Lax, M. H. ....St. Paul
§Laymon, C. W. ....Minneapolis
§Leahy, Bartholomew ....St. Paul
§Leary, W. V. ....Rochester
§Leavenworth, R. O. ....St. Paul
†Leavitt, H. H. ....Minneapolis
Leavitt, M. D. ....Rochester
LeBlanc, L. J. ....Rochester
Lebowske, J. A. ....Minneapolis
§Leck, P. C. ....Austin
§Leddy, E. T. ....Rochester
Lee, H. M. ....Minneapolis
§Lee, H. W. ....Brainerd
§Lee, J. B. ....Rochester
Lee, W. N. ....Madison
Leemhuis, G. H. ....Aitkin
Leibold, E. F. ....New Prague
Leibold, H. H. ......Parkers Prairie
Leick, R. M. ....St. Paul
§Leitch, Archibald ....St. Paul
§Leitschuh, T. H. ....Sanborn
Leitschuh, L. F. ....Sleepy Eye
§Leland, H. R. ....Minneapolis
Lemon, W. E. ....Rochester
§Lemon, W. S. ....Rochester
§Lenander, M. E. L. ....St. Peter
§Lenarz, A. J. ....Browerville
§Lende, Norman ....Faribault
Lenont, C. B. ....Virginia
Lenz, J. R. ....Morton
§Lenz, O. A. ....Minneapolis
§Leonard, L. J. ....Minneapolis
§Leonard, Samuel ....Minneapolis
Leopard, B. A. ....Albert Lea
Lepak, F. J. ....Duluth
§Lepak, J. A. ....St. Paul
†Lerche, William ....Cable, Wis.
§Leven, N. L. ....St. Paul
Leverenz, C. W. ....St. Paul
Levin, Bert ....St. Paul
Levin, Louis ....Rochester
Levitt, G. X............St. Paul
§Lewis, A. J. ....Henning
Lewis, C. B. ....St. Cloud
Lexa, F. J. ....Lonsdale
Libert, J. N. ....St. Cloud
§Lick, C. L. ....St. Paul
Liedloff, A. G. ....Mankato
Lien, R. J. ....St. Paul
§Liffrig, W. W. ....Red Wing
§Lightbourn, E. L. ....St. Paul
Lightfoot, Grace K. ......Rochester
§Lilleberg, N. J. ....St. Paul
Lillehei, E. J. ....Robbinsdale
§Lillie, H. I. ....Rochester
§Lillie, J. C. ....Rochester
Lima, L. R. ....Montevideo
Lima, L. R., Jr. ....Montevideo
Lind, C. J. ....Minneapolis
‡Lind, C. J., Jr. ....Minneapolis
Lindberg, A. L. ....Wheaton
Lindberg, A. C. ....Minneapolis
§Lindberg, V. L. ....Minneapolis
§Lindblom, A. E. ......Minneapolis
§Linde, Herman ....Cyrus
§Lindgren, R. C. ....Minneapolis
Lindley, S. B. ....Willmar
§Lindquist, R. H. ......Minneapolis
§Linner, H. P. ....Minneapolis
Lippman, E. S. ....Minneapolis
Lippman, H. S. ....St. Paul
Lippmann, E. W. ......Hutchinson
§Lipschultz, Oscar ......Minneapolis
§Lipscomb, P. R. ....Rochester
§Litchfield, J. T. ....Minneapolis
Litman, A. B. ....Minneapolis
§Litman, S. N. ....Duluth
*†Little, W. J. ....St. Paul
§†Litzenberg, J. C. ......Minneapolis
*†Lochead, D. C. ....Rochester
Lofgren, K. A. ....Rochester
§Lofsness, S. V. ....Minneapolis
§Logan, A. H. ....Rochester
§Logan, G. B. ....Rochester
§Logefeil, R. C. ....Minneapolis
§Lohmann, J. G. ....Pipestone
§Loken, Theodore ....Ada
§Loken, S. M. ....St. Paul
Lombardi, A. A. ....Rochester
§Lommen, P. A. ....Austin
Long, Mary............Rochester
Longfellow, Helen B. W. ..Brainerd
Loofbourrow, E. H. ......Keewatin
§Loomis, E. A. ....Minneapolis
§Loomis, G. L. ....Winona
Loose, W. D. ....Rochester
Love, F. A. ....Carlos
§Love, J. G. ....Rochester
§Lovelady, S. B. ....Rochester
Lovett, Beatrice R. ....Oak Terrace
§‡Lovshin, L. L. ....Rochester
Lowe, E. R. ....So. St. Paul
§Lowe, G. H. ....Rochester
Lowe, T. A. ....So. St. Paul
Lowry, Elizabeth C. ....Minneapolis
Lowry, Thomas ....Minneapolis
§Loyd, E. L. ....Rochester
Luck, Hilda ....Mankato
§Luckemeyer, C. J. ....St. Cloud
Ludden, T. E. ....Rochester
Luellen, T. J. ....Rochester
§Lufkin, N. H. ....Minneapolis
§Lund, C. J. T. ....Fergus Falls
Lund, C. J. ....Minneapolis
Lund, W. J. ....Staples
Lindberg, Ruth I. ......Minneapolis
Lundblad, R. A. ....Minneapolis
Lundblad, S. W. ....Minneapolis
Lundell, C. L. ....Granite Falls
Lundgren, A. C. ......Minneapolis
§Lundholm, A. M. ....St. Paul
§Lundquist, E. F. ......Minneapolis
§Lundy, J. S. ....Rochester
§Luth, D. V. ....Duluth
§Lyman, R. W. ....Rochester
§Lynch, F. W............St. Paul
Lynch, J. L. ....Rochester
§Lynch, M. J. ....Minneapolis
Lynch, R. C. ....New Orleans, La.
§Lynde, O. G. ......Thief River Falls
Lysne, Henry ....Minneapolis
§Lysne, Myron ....Minneapolis

*Macbeth, J. L. ....St. Clair
§MacCarty, C. S. ....Rochester
§†MacCarty, W. C. ....Rochester
†MacDonald, A. E. ......Minneapolis
§MacDonald, D. A. ....Minneapolis
§Macdonald, I. D. ....Rochester
§MacFarlane, P. H. ....Chisholm
§Mach, F. B. ....Minneapolis
Mack, J. J. ....Little Rock, Ark.
MacKinnon, D. C. ....Minneapolis
Macklin, W. E., Jr. ....Mankato
Macklin, W. E., Jr. ......Litchfield
§MacLean, A. R. ....Rochester
§MacMillan, D. G. ......Minneapolis
MacMurtrie, W. J., Jr. ....Rochester
Macnie, J. S. ....Minneapolis
§MacRae, G. C. ....Duluth
Macy, Dorothy ....Rochester
§Madden, J. F. ....St. Paul
§Madland, R. S. ....St. Paul
§Maeder, E. C. ....Minneapolis
Maertz, W. F. ....St. Paul
§Magath, T. B. ....Rochester
§Magney, F. H. ....Duluth
Magnuson, A. E. ....Wheaton
§Magraw, R. M. ....St. Paul
§Mahle, D. G. ....Plainview
§Mahowald, A. ....Albany
Maitland, E. T. ....Jackson
§Maland, C. O. ....Minneapolis
Malerich, J. A. ....St. Paul
§Malmstrom, J. A. ....Virginia
§Manley, J. R. ....Duluth
§†Mann, F. C. ....Rochester
†Manson, F. M. ....Worthington
†Marcley, W. J. ....Minneapolis
§Marek, F. H. ....Rochester
Margulies, Harold ....Rochester
§Mariette, E. S. ....Oak Terrace
§Mark, D. B. ....Minneapolis
Mark, Hilbert ....Minneapolis
§Marking, G. H. ....Minneapolis
Marks, R. W. ....St. Paul
Marr, G. E. ....Rochester
Marshall, Helen S......Statesan, Wis.
Martens, T. G. ....Rochester
Martin, D. L. ....St. Paul
Martin, T. P. ....Arlington
§Martin, W. C. ....Duluth
§Martineau, J. L. ....St. Paul
Martinson, C. J. ....Wayzata
†Martinson, E. J. ....Wayzata
Marvin, C. P. ....Rochester
§Masson, D. M. ....Rochester
§Masson, J. C. ....Rochester
†Matchan, G. R. ....Minneapolis
Matthews, Justus ....Minneapolis
§Mattill, P. M. ....Oak Terrace
§Mattison, P. A. ....Winona
Mattson, A. D. ....Madison
§Mattson, H. A. N. ......Minneapolis
§Maxeiner, S. R. ....Minneapolis
§Mayfield, L. H. ....Rochester
§†Mayne, R. M. ....Duluth
§Mayo, C. W. ....Rochester
§Maytum, C. K. ....Rochester
McAdams, J. B. ....St. Paul
McAnally, A. K. ....Rochester
§McBean, J. B. ....Rochester
§†McCaffrey, F. J. ......Minneapolis
McCain, D. L. ....St. Paul
McCann, D. F. ....Bemidji
§McCarten, F. M. ....Stillwater
McCarthy, Donald ......Minneapolis
McCarthy, J. J. ....St. Paul
McCarthy, W. R. ....St. Paul
McCartney, J. S. ......Minneapolis
†McCarty, P. D. ....Ely
McClanahan, J. H. ......White Bear
McClanahan, T. S. ......White Bear
McClellan, J. T.............Rochester
§McCloud, C. N. ....St. Paul
§McConahey, W. M., Jr.,....Rochester
†McCoy, Mary K. ....Duluth
McCreight, W. G. ....Rochester
‡McCrimmon, H. P. ......Minneapolis
†McDaniel, Orianna ......Minneapolis
McDonald, A. L. ....Duluth
§McDonald, J. R. ....Rochester
§McDowell, J. P. ....St. Cloud
McEachern, C. G. ......Rochester
§McElin, T. W. ....Rochester
McElmeel, E. F. ....Seattle, Wash.
McEnaney, C. T. ......Owatonna
§McEwan, Alexander ....St. Paul
§McFarland, A. H. ......Minneapolis
§McGandy, R. F. ....Minneapolis
§McGeary, G. E. ....Minneapolis
McGroarty, J. J. ....Easton
§McGuff, P. E. ....Rochester
McGuigan, H. T. ....Red Wing
§McHaffie, O. L. ....Duluth
§McInerny, M. W. ......Minneapolis
§McIntire, H. M. ....Waseca
McIntyre, J. A. ....Owatonna
McIver, B. A. ....Lowry
McKaig, C. B. ....Pine Island
McKelvey, J. L. ......Minneapolis
§McKenna, J. K. ....Austin
McKenna, M. J. ......Grand Rapids
§McKenzie, C. H. ......Minneapolis
McKeon, J. O..............Faribault
§McKinlay, C. A. ......Minneapolis
†McKinley, J. C. ....Minneapolis
§McKinney, F. S. ......Minneapolis
McLane, W. O. ....Duluth
†McLaren, Jennette M. ..Minneapolis
McLaughlin, B. H. ......Rochester
McLaughlin, E. M. ....Winona
McLeod, J. L..........Grand Rapids
§McMahon, J. M. ....Rochester
McMahon, M. J...........Green Isle
McMillan, J. T. ....Rochester
McMurtrie, W. B........Minneapolis
§McNutt, J. R. ....Duluth
§McPheeters, H. O. ....Minneapolis
McQuarrie, H. B. ....Rochester
†McQuarrie, Irvine ......Minneapolis
McVicker, J. H. ....Rochester
Mead, C. H. ....Duluth
§Meade, J. R. ....St. Paul
§Mears, B. J. ....St. Paul
§Mears, R. F. ....Northfield
§Medelman, J. P. ....St. Paul
Medlin, C. F. ....Truman
§Meinert, A. E. ....Winona
Melancon, J. F. ....St. Paul
Melby, Benedik ..Blooming Prairie
§Mellby, O. F. ....Thief River Falls
Meller, R. L. ....Minneapolis
Melzer, G. R. ....Lyle
§Mercil, W. F. ....Crookston
§Merkert, C. E. ....Minneapolis
§Merkert, G. L. ....Minneapolis
†Merrick, Charlotte T. ....Minneapolis

†Merrill, Elisabeth ......Minneapolis
§Merrill, R. W. ....Morris
§Merriman, L. L. ....Duluth
§Merritt, W. A. ....Rochester
§Mesker, G. H. ....Cambridge
Messler, J. D. ....Rochester
Meyer, A. A. ....Melrose
§Meyer, A. C. ....Rochester
§Meyer, A. J. ....Minneapolis
§Meyer, E. L. ....Minneapolis
Meyer, F. C. ....Kenyon
Meyer, J. O. ....Grand Rapids
Meyer, P. F. ....Faribault
Meyer, W. M. ....Rochester
§Meyerding, E. A. ....St. Paul
Meyerding, H. W. ....Rochester
Meyers, W. C. ....Rochester
Mezen, J. F. ....Rochester
Michael, J. C. ....Minneapolis
Michel, H. H. ....Minneapolis
Michels, R. P. ....Willmar
§Michelson, H. E. ......Minneapolis
†Mickelsen, Emma F......Minneapolis
§Mickelson, J. C. ....Mankato
Milhaupt, E. N. ....St. Cloud
Millen, F. J. ....Rochester
§Miller, E. W. ....Anoka
§Miller, H. E. ....Minneapolis
Miller, Hugo E. ....Minneapolis
§Miller, J. C. ....Minneapolis
‡Miller, Sidney ....Rochester
§Miller, V. I. ....Mankato
Miller, W. A. ......New York Mills
Mills, J. L. ....Winnebago
§Milton, J. S. ....Minneapolis
Minckler, J. E. ....St. Paul
Miners, G. A. ....Deer River
§Minsky, A. A...........Minneapolis
§Minty, E. W. ....Duluth
Mitby, I. L. ....Aitkin
Mitchell, B. D. ....Minneapolis
Mitchell, E. C. ....Minneapolis
Mitchell, M. T. ....Minneapolis
§Moberg, C. W. ......Detroit Lakes
§Moe, J. H. ....Minneapolis
§Moe, R. J. ....Duluth
Moe, Thomas ....Moose Lake
§Moen, J. K., Jr. ....Minneapolis
§Moersch, F. P. ....Rochester
§Moersch, H. J. ....Rochester
§Moga, J. A. ....St. Paul
Molander, H. A. ....St. Paul
Mollers, T. P. ......Mountain Iron
Monahan, Elizabeth S. ..Minneapolis
Monahan, R. H., Jr., ...
International Falls
Monroe, P. B. ....Cloquet
Monserud. N. O. ....Cloquet
§Monson, E. M. ....Minneapolis
Montgomery, G. E. ......Rochester
§Montgomery, Hamilton ....Rochester
§Mooney, L. P. ....Graceville
Moos, D. J. ....Minneapolis
Moquin, Marie A. ....St. Paul
More. C. W. ....Eveleth
Morehead, D. E. ....Owatonna
Moren, Edward ....Minneapolis
Morgan, E. H. ....Rochester
§Morgan, H. O. ....Amboy
Morgan, J. L. ....Rochester
Moriarty, Berenice ....St. Paul
Moriarty, Cecile R. ....St. Paul
§Mork, A. H. ....Anoka
§Mork, B. O., Jr. ......Worthington
§Mork, B. O., Sr. ......Worthington
§Mork, F. E. ....Anoka
Morley, G. A. ....Crookston
§Morlock, C. G. ....Rochester
§Morris, D. S. ....Rochester
Morrison, A. W. ......Minneapolis
Morrison, Charlotte J. ..Minneapolis
Morrow, J. R. ....Rochester
Morse, M. P. ....Le Roy
§Morse, R. W. ....Minneapolis
§Morseman, L. W. ....Hibbing
Morton, R .J. ....Rochester
§Mosby, M. E. ....Long Prairie
§Moses, Joseph, Jr. ......Northfield
Moses, R. R. ....Kenyon
§Mouritsen, G. J. ......Fergus Falls
Mueller, R. F..........Lincoln, Nebr.
Mueller, Selma C. ....Duluth
Muir, W. F. ....Browns Valley
Muller, A. E. ....North Saint Paul
§Muller, R. T. ....St. Paul
§Mulligan, A. M. ....Brainerd
Mulmed, E. I. ....Rochester
§Murphy, E. P. ....Minneapolis
§Murphy, I. J. ....Minneapolis
Murphy, J. E. ....Marshall
§Murphy, James E. ....St. Cloud
‡Murphy, J. T. ....Rochester
Murphy, M. E. ....Rochester
Murray, R. A. ....Hibbing

Murray, R. A. ....Rochester
Musachio, N. F................Foley
Musgrove, J. E. ....Rochester
Mussey, Mary E. ....Rochester
§Mussey, R. D. ....Rochester
Mussey, Robert D., Jr. ....Rochester
†Musty, N. J. ....Minneapolis
§Myers, J. A. ....Minneapolis
§Myers, T. T................Rochester
Myre, C. R. ....Paynesville

Naegeli, A. E. ....St. Paul
§Naegeli, Frank..........Fergus Falls
Nagel, H. D. ....Waconia
§Nash, L. A. ....St. Paul
§Naslund, A. W. ....Minneapolis
Nauth, B. S. ....Winona
§Navratil, D. R. ....Montgomery
‡Nay, R. M. ....Rochester
§Neal, J. M. ....Minneapolis
§Nealy, D. E. ....Adrian
Neary, R. P. ....Minneapolis
§Neel, H. B. ....Albert Lea
Neff, W. S. ....Virginia
§Nehring, J. P. ....Preston
Neibling, H. A. ....Rochester
Nelson, A. S. ....Thief River Falls
Nelson, Bernette G. ......Menagha
Nelson, Bernice A. ....Northome
Nelson, C. E. J. ....Albert Lea
Nelson, E. H. ....Chisholm
§Nelson, E. J. ....Owatonna
Nelson, E. N. ....Minneapolis
Nelson, H. E. ....Crookston
§Nelson, G. E. ....Fairfax
†Nelson, H. S. ....Los Angeles, Calif.
Nelson, K. L. ....Clara City
§Nelson, L. A. ....St. Paul
Nelson, L. S. ....Hibbing
§Nelson, M. C. ....Minneapolis
§Nelson, M. S. ....Granite Falls
§Nelson, N. H. ....Minneapolis
§Nelson, N. P. ....Brainerd
§Nelson, O. L. N. ......Minneapolis
Nelson, R. A. ....Fergus Falls
§Nelson, R. L. ....Duluth
§Nelson, W. I. ....Minneapolis
§Nelson, W. O. B. ......Fergus Falls
Nesbitt, Samuel..........Minneapolis
§Nesheim, M. O. ....Emmons
§Nessa, C. B. ....St. Cloud
Nesset, L. B. ....Minneapolis
Neumaier, Arthur ....Glencoe
Neumann, C. A. ....Winona
§New, G. B. ....Rochester
§Nichols, A. E. ....St. Paul
§Nichols, D. R. ....Rochester
§Nicholson, M. A. ....Duluth
‡Nickel, W. R..............Rochester
Nickerson, J. R. ....Heron Lake
‡Nickeson, R. W. ....Rochester
Nielsen, W. L. ....Rochester
Nielson, A. M. ....Northfield
Nietfeld, A. B. ....Warren
§Nilson, H. J. ......North Mankato
Ninneman, N. N. ....Waconia
Nix, J. T. ....Rochester
Nixon, J. B. ....Crosby
Nixon, R. R. ....Rochester
§Noble, J. F. ....St. Paul
§Noble, J. L. ....St. Paul
Nolan, D. E. ....Dayton, Ohio
Noonan, W. J. ....Minneapolis
§Noran, H. H. ....Minneapolis
Norberg, C. E. ....Cloquet
§Nord, R. E. ....Minneapolis
§Nordin, G. T. ....Minneapolis
Nordland, M. A............Rochester
§Nordland, Martin........Minneapolis
Norley, Theodore ....Rochester
§Nordman, W. F. ....Mora
§Norman, J. F. ....Crookston
§Norris, N. T. ....Caledonia
§†Noth, H. W. ....Minneapolis
Novak, E. E. ....New Prague
Norval, M. A. ....Rochester
Nuebel, C. J. ....St. Paul
Nuessle, W. G. ....Springfield
§Nuetzman, A. W. ....Faribault
§Nutting, R. E. ....Duluth
§Nydahl, M. J. ....Minneapolis
Nye, Katherine A. ....St. Paul
Nye, Lillian L. ....St. Paul
Nygren, W. T. ....Braham
§Nylander, E. G. ....Minneapolis
Nystrom, Ruth G. ......Minneapolis

§Oberg, C. M. ....Minneapolis
O'Brien, L. T. ......Breckenridge
O'Brien, R. W. ....Rochester
†O'Brien, W. A. ....Minneapolis
O'Brien, W. M. ....St. Paul
§Ochsnner, C. G. ....Wabasha
O'Connor, D. C. ....Eden Valley

O'Connor, L. J. ....St. Paul
Odel, H. M. ....Rochester
Odessky, **Louis ..Staten Island, N. Y.**
§O'Donnell, D. M. ....Ortonville
O'Donnell, J. E. ......Minneapolis
§Oeljen, S. C. G. ....Waseca
Oerting, Harry ....St. Paul
§Ogden, Warner ....St. Paul
§Ohage, Justus, Jr. ....St. Paul
§O'Hanlon, J. A. ....Lindstrom
O'Kane, T. W. ....St. Paul
§O'Keefe, J. P. ....St. Cloud
Olcott, E. D. ....Rochester
§Olds, G. H. ....New Richland
§O'Leary, P. A. ....Rochester
§Oliver, I. L. ....Graceville
§Oliver, James ....Moorhead
§Olmanson, E. G. ....St. Peter
§Olsen, A. M. ....Rochester
§Olsen, E. G..............Minneapolis
Olsen, R. L. ....St. Paul
Olsen, Gertrude E. ......Georgetown
§Olson, A. C. ....Minneapolis
Olson, A. E. ....Duluth
§Olson, A. O. ....Duluth
Olson, C. A. ....St. Paul
Olson, C. J. ....Belle Plaine
§Olson, D. O. C. ....Gaylord
§Olson, E. A. ....Pine Island
§Olson, G. E. ....West Concord
Olson, J. W. ....Minneapolis
†Olson, O. A. ....Minneapolis
Olson, O. C. ....Rochester
§†Olson, R. G. ....Minneapolis
Olson, S. W. ....Rochester
O'Neal, Ruth ....Rochester
Onsgard, L. K. ....Houston
§Oppegaard, C. L. ....Crookston
§Oppegaard, M. O. ......Crookston
§Oppen, E. G. ....Minneapolis
§O'Reilley, B. E. ....St. Paul
‡Osborn, J. E. ....Rochester
Ostergaard, Erling ....Fergus Falls
§Ostergren, E. W. ....St. Paul
Otten, D. E. ....Minneapolis
Otto, H. C. ....Frazee
§Ouellette, A. J. ....St. Paul
Owen, A. C. ....Rochester
Owens, W. A. ....Montevideo
†Owre, Oscar ....Minneapolis

§Paalman, R. J. ....Rochester
§Page, R. L. ....St. Charles
§Paine, J. R..............Minneapolis
Palen, B. J. ....Minneapolis
Palmer, C. F. ....Albert Lea
Palmer, H. A. ....Blackduck
Palmer, J. K. ....Rochester
Palmer, W. L. ....Albert Lea
Palmerton, E. S, ...Albert Lea
Pankratz, P. J. ....Mountain Lake
Parke, F. F. ....Rochester
†Parker, O. W. ....Duluth
§Parker, H. L. ....Rochester
§Parker, R. L. ....Rochester
Parker, W. E. ....Sebeka
Parker, W. H. ....Chisholm
Parkhill, Edith M. ....Rochester
Parkin, T. W. ....Rochester
Parson, E. I..................Duluth
Parson, Lillian B. ......Elbow Lake
Parson, L. R. ....Elbow Lake
Parsons, J. G. ....Crookston
Parsons. R. L. ....Monterey
Paschall, Jack, Jr. ......Rochester
Pasek, A. W. ....Cloquet
§Passer, A. A. ....Olivia
§Patch, O. B. ....Duluth
Patterson, H. D. ....Slayton
Patterson, R. B. ....Marshall
§*Patterson, W. E. ......Minneapolis
Patterson, W. L. ......Fergus Falls
§Paulson, E. C. ....Elbow Lake
Paulson, G. S. ....Evansville
Paulson, J. A. ....Rochester
Paulson, T. S. ....Fergus Falls
Pearsall, R. P. ....Virginia
§Pearson, B. F. ....Shakopee
Pearson, C. C. ....Rochester
Pearson, D. J. ..Battle Creek, Mich.
§Pearson, F. R...............St. Paul
Pearson, L. O...............Warroad
Pearson, M. M...............St. Paul
Pease, Gertrude L. ......Rochester
Peck, L. D.................Hastings
Peck, L. R.................Hastings
Pedersen, A. H.............St. Paul
§Pedersen, R. C...............Duluth
§Peltzer, W. ....Rochester
§Pemberton, J. deJ..........Rochester
§Pender, J. W..............Rochester
Penhall, F. W. ....Willmar
§Penk, E. L...............Springfield
§Penn, G. E.................Mankato

Pennie, D. F.	Duluth
§Peppard, T. A.	Minneapolis
Perkins, R. F.	Rochester
Perlman, E. C.	Minneapolis
§Perry, C. G.	St. Paul
§Perry, E. L.	Rochester
§Person, J. P.	Alden
Pertl, A. L.	Canby
‡Peters, G. A.	Rochester.
Petersen, G. L.	Minneapolis
§†Petersen, J. R.	Minneapolis
§Petersen, M. C.	Rochester
§Petersen, P. C.	Mora
§Petersen, R. T.	St. Cloud
§Peterson, C. A.	Chisago City
Peterson, D. B.	St. Paul
Peterson, E. N.	Virginia
§Peterson, H. O.	St. Paul
Peterson, H. W.	Minneapolis
§Peterson, J. L. E.	St. Paul
Peterson, J. H.	Minneapolis
Peterson, J. R.	Rochester
Peterson, K. H.	Hutchinson
Peterson, L. J.	Minneapolis
§Peterson, N. P.	Minneapolis
Peterson, O. L.	Cokato
Peterson, O. H.	Minneapolis
§Peterson, P. E.	Minneapolis
Peterson, R. A.	Vesta
§Peterson, W. C.	Minneapolis
Peterson, W. E.	Willmar
Peterson, W. Henry	Minneapolis
§Petit, J. V.	Minneapolis
§Petit, L. J.	Minneapolis
Petraborg, H. T.	Aitkin
Pewters, J. T.	Minneapolis
Peyton, W. T.	Minneapolis
§Pfuetze, K. H.	Cannon Falls
Pfeutze, M. E.	Rochester
§Pfunder, M. C.	Minneapolis
§Phelps, K. A.	Minneapolis
Phillips, S. K.	Rochester
Pierce, C. H.	Wadena
§Pierce, P. P.	Rochester
Pierson, R. F.	Slayton
§Piper, M. C.	Rochester
§Piper, W. A.	Mountain Lake
Plass, H. F. R.	Minneapolis
§Platou, E. S.	Minneapolis
§Pleissner, K. W.	St. Louis Park
§Plimpton, N. C., Jr.	Minneapolis
§Plondke, F. J.	St. Paul
§Plummer, W. A.	Rochester
Pogue, R. E.	Watertown
§Pohl, J. F. M.	Minneapolis
Poirier, J. A.	Forest Lake
§Pollard, D. W.	Minneapolis
Pollard, W. H., Jr.	Duluth
§Polley, H. F.	Rochester
§Pollock, D. K.	Minneapolis
§*Pollock, L. W.	Rochester
§Polzak, J. A.	Minneapolis
§Ponterio, J. E.	Shakopee
§Pool, T. L.	Rochester
Poore, J. C.	Isle
§Poore, T. N.	Rochester
§Popp, W. C.	Rochester
Poppe, F. H.	Minneapolis
Porter, O. M.	Willmar
Potek, D. M.	International Falls
§Potter, R. B.	Minneapolis
Potthoff, C. J.	Washington, D. C.
§Power, J. E.	Duluth
§Powers, F. H.	Rochester
§Prangen, A. D.	Rochester
Pratt, F. J.	Minneapolis
§Pratt, J. H., Jr.	Rochester
Pratt, W. C.	Rochester
§Preine, I. A.	Minneapolis
Preisinger, J. W.	Renville
§Prendergast, H. J.	St. Paul
Preston, F. W.	Rochester
Preston, L. F.	Rochester
Preston, P. J.	Minneapolis
§Prickman, L. E.	Rochester
Priest, R. E.	Minneapolis
§Priestly, J. T.	Rochester
§†Prim, J. A.	Minneapolis
§Prins, L. R.	Albert Lea
Proeschel, R. K.	Willmar
Proffitt, W. E.	Minneapolis
§Proshek, C. E.	Minneapolis
§Pruitt, R. D.	Rochester
§Pugh, D. G.	Rochester
Pugh, P. F. H.	Rochester
Purves, G. H.	Hendricks
Pumula, E. E.	Minneapolis
§Puumala, R. H.	Cloquet
Pyle, Marjorie M	Rochester

§Quanstrom, V. E.	Brainerd
Quattlebaum, Frank	St. Paul
§Quello, R. O. B.	Minneapolis
§*†Quinby, T. F.	Minneapolis
§Quist, H. W.	Minneapolis
†Quist, H. W., Jr.	Minneapolis

Raadquist, C. S.	Hibbing
Radabaugh, R. C.	Hastings
§Raetz, S. J.	Maple Lake
Raihala, John	Virginia
§Raiter, R. F.	Cloquet
Ralph, J. R.	St. Paul
§Ralston, D. E.	Rochester
Ramsey, W. H., II	Rochester
†Ramsey, W. R.	St. Paul
Randall, A. M.	Ashby
§Randall, L. M.	Rochester
Rang, R. H.	Rochester
§Ransom, H. R.	Osseo
Ransom, M. L.	Hancock
Rasmussen, R. C.	St. Paul
§Rasmussen, W. C.	Rochester
§†Ratcliffe, J. J.	Aitkin
Rea, C. E.	St. Paul
Reader, D. R.	Minneapolis
Reed, Paul	Virginia
Reeve, E. T.	Elbow Lake
§Reff, A. R.	Crookston
Regan, J. J.	Minneapolis
§Regnier, E. A.	Minneapolis
Reid, L. M.	Excelsior
§Reif, H. A.	Minneapolis
§Reif, H. J.	St. Cloud
§Reiley, R. E.	Minneapolis
§†Reineke, G. F.	New Ulm
†Reiter, H. W.	Shakopee
Remington, J. H.	Rochester
Rempel, D. D.	Lester Prairie
Remsberg, R. R.	Tracy
Replogle, W. H.	Wabasha
§Reynolds, J. S.	Minneapolis
§Rice, C. O.	Minneapolis
Rice, H. G.	Aitkin
Rice, Roberta G.	Aitkin
§Richards, E. T. F.	St. Paul
§Richards, W. B.	St. Cloud
§Richardson, H. E.	St. Paul
Richardson, R. J.	St. Paul
§Richdorf, L. F.	Minneapolis
Rick, P. F. W.	St. Paul
§Ridgway, A. M.	Annandale
Riegel, G. S.	Taylors Falls
§Rieke, W. W.	Wayzata
Rigler, L. G.	Minneapolis
Ringle, O. F.	Walker
Riordan, Elsie M.	Minneapolis
Ripple, R. J.	New London
§Risch, R. E.	Minneapolis
§Risser, A. F.	Stewartville
§Ritchie, W. P.	St. Paul
§Ritt, A. E.	St. Paul
§Rivers, A. B.	Rochester
Rizer, D. K.	Minneapolis
Rizer, R. I.	Minneapolis
§*Roan, C. M.	Minneapolis
Roan, O. M.	Minneapolis
Robb, E. F.	Minneapolis
§†Robbins, C. P.	Winona
§Robbins, O. F.	Minneapolis
Roberts, L. J.	Minneapolis
Roberts, O. W.	Owatonna
Roberts, S. W.	Minneapolis
§Roberts, W. B.	Minneapolis
†Robertson, J. B.	Minneapolis
§Robertson, P. A.	Austin
§Robilliard, C. M.	Faribault
†Robinson, J. M.	Goshen, N. Y.
Robitshek, E. C.	Minneapolis
Robson, J. T.	Rochester
§Rodda, F. C.	Minneapolis
Rodgers, C. L.	Minneapolis
§Roehlke, A. B.	Elk River
§Roemer, H. J.	Winona
§Rogers, C. W.	Minneapolis
Rogers, G. E. B.	Minneapolis
Rogers, J. D.	Rochester
§Rogers, S. F.	St. Paul
§Rogne, W. G.	Spring Grove
§Roholt, C. L.	Waverly
Rohrer, C. A.	Waterville
Rokala, H. E.	Virginia
Rolig, D. H.	St. Paul
§†Rood, D. C.	Duluth
§Rose, J. T.	Lakefield
Rosenbaum, E. E.	Rochester
§Rosenbladt, Louis	Tacoma, Wash.
Rosendahl, F. G.	Minneapolis
Rosenfield, A. B.	Minneapolis
Rosenholtz, Burton	St. Paul
Rosenow, E. C.	Cincinnati, Ohio
Rosenow, J. H.	Rochester
§Rosenthal, F. H.	Austin
§Rosenthal, Robert	St. Paul
§Rosenwald, R. M.	Minneapolis
Roskilly, G. C. P.	Minneapolis
§Ross, A. J.	Minneapolis
Rossberg, R. A.	Morris
§Roth, F. D.	Lewiston
§Roth, G. C.	St. Paul
Rothschild, H. J.	St. Paul
§Roust, H. A.	Montevideo
Rovelstad, R. A.	Rochester
Rowe, O. W.	Duluth
Rowe, W. H.	Fairmont
§Rowles, E. K.	Coleraine
§Roy, P. C.	St. Paul
§Rucker, C. W.	Rochester
§Rucker, W. H.	Minneapolis
Rud, N. E.	Minneapolis
Rudell, G. L.	Minneapolis
§Rudie, P. S.	Duluth
Ruff, C. C.	Rochester
Ruggles, G. M.	Forest Lake
§†Ruhberg, G. N.	St. Paul
Rulison, E. T., Jr.	Rochester
Rumpf, C. W.	Faribault
†Rumpf, W. H.	Faribault
Ruona, M. A.	St. Paul
‡Rushton, J. G.	Rochester
§Russ, F. H.	Rochester
Russ, H. H.	Blue Earth
§Russeth, A. N.	Minneapolis
§Rusten, E. M.	Minneapolis
Rutherford, W. C.	Nisswa
Rutledge, L. H.	Detroit Lakes
Ryan, J. D.	St. Paul
§Ryan, J. J.	St. Paul
§Ryan, J. M.	St. Paul
§Ryan, M. E.	St. Paul
Ryan, R. E.	Rochester
§Ryan, W. J.	Duluth
§Rydburg, W. C.	Brooten
§Ryding, V. T.	Howard Lake
Rydland, A. D.	Crookston
Rygh, H. N.	Atwater
§Rynearson, E. H.	Rochester

Sach-Rowitz, Alvan	Moose Lake
§Sadler W. P., Jr.	Minneapolis
§Saffert, C. A.	New Ulm
Sahr, W. G. C.	Hutchinson
§St. Cyr, K. J.	Robbinsdale
Salassa, R. M.	Rochester
§Saliterman, B. I.	Minneapolis
§*Salt, C. G.	Minneapolis
§Salter, R. A.	Virginia
§Samson, E. R.	Stillwater
§Samuelson, L. G.	Mankato
Samuelson, Samuel	Minneapolis
Sandell, S. T.	Nopeming
§Sanderson, A. G.	Deerwood
†Sanderson, E. T.	Alexandria
§Sandt, K. E.	Minneapolis
Sandven, N. O.	Paynesville
§Sanford, A. H.	Rochester
Sanford, J. A.	Farmington
Sarff, O. E.	Duluth
§Sarnecki, M. M.	St. Paul
§Satersmoen, Theodore	Pelican Rapids
†Sather, Allen	Crookston
§Sather, E. R.	Alexandria
Sather, G. A.	Fosston
Sather, R. N.	Mora
§Sather, R. O.	Crookston
§Satterlee, H. W.	Lewiston
Satterlund, V. L.	St. Paul
Sauer, W. G.	Rochester
§Savage F. J.	St. Paul
§Sawatzky, W. A.	Minneapolis
Sax, M. H.	Duluth
Sax, S. G.	Duluth
§Sayre, G. P.	Rochester
Scales, J. R.	Kingsville, Texas
Scanlon, R. L.	Rochester
§Schaaf, F. H. K.	Minneapolis
§Schade, F. L.	Worthington
Schaefer, J. F.	Owatonna
§Schaefer, Samuel	Winona
§Schaefer, W. G.	Minneapolis
Schafer, L. A.	Rochester
Schamber, W. F.	Parkers Prairie
Schatz, F. J.	St. Cloud
§Scheifley, C. H.	Rochester
†Scheldrup, N. H.	Minneapolis
§Scherer, L. R.	Minneapolis
Schiele, B. C.	Minneapolis
Schimelpfenig, G. T.	Chaska
§Schleinitz, F. B.	Battle Lake
Schlesselman, G. H.	Anoka
§Schlesselman, J. T.	Mankato
Schmidt, E. C.	Rochester
§Schmidt, G. F.	Minneapolis
§Schmidt, H. W.	Rochester
Schmidt, P. A.	Good Thunder
§Schmidt, P. G., Jr.	Granite Falls
§Schmidt, W. R.	Worthington
Schmidtke, R. L.	St. Paul
†Schmitt, A. F.	Minneapolis
†Schmitt, S. C.	Los Angeles, Calif.
§Schmitz, A. A.	Mankato
§Schmitz, E. J.	Holdingford

†Schneider, J. P.............Minneapolis
§Schneider, L. E.................Duluth
Schneider, P. J....................Adams
Schneider, R. A.............Minneapolis
†Schneidman, N. R...........Minneapolis
Schoch, R. B. J.................St. Paul
Scholpp, O. W..............Hutchinson
‡Scholten, R. A...............Rochester
§Schons, Edward................St. Paul
§Schottler, G. J....................Dexter
Schottler, M. E..............Minneapolis
§Schroder, C. H...................Duluth
Schroeckenstein, H. F.........St. Paul
§Schroeppel, J. E. ....Winthrop
§†Schuldt, F. C..................St. Paul
Schultz, J. A.................Albert Lea
Schultz, J. H................Minneapolis
§Schultz, P. J...............Minneapolis
§Schulze, A. G...................St. Paul
Schumacher, J. W. ....St. Paul
†Schussler, O. F.............Minneapolis
Schutz, E. S............Mountain Lake
§Schwartz, V. J.............Minneapolis
Schweiger, T. R..................Hibbing
†Schwyzer, Gustav..........Minneapolis
§Schwyzer, H. C..................St. Paul
†Scofield, C. L.......................Benson
§Scott, E. E........................St. Paul
†Scott, F. H....................Minneapolis
§Scott, H. G....................Minneapolis
Seaberg, J. A. ....Minneapolis
§†Seashore, Gilbert.........Minneapolis
Seashore, R. T. ....St. Paul
Seebach, Lydia M............Rochester
Seham, Max....................Minneapolis
§Seifert, M. H....................Excelsior
§Seifert, O. J....................New Ulm
Seiler, H. H. ....Rochester
Seitz, S. B.....................Barnesville
§Seldon, T. H...................Rochester
§Seljeskog, S. R.............Minneapolis
Sellers, G. K. ....Dassel
Selmo, J. D......................Norwood
Selvig, H. S.......................St. Paul
Senescall, C. R.....Enumclaw, Wash.
‡Sengpiel, G. W...............Rochester
†Senkler, G. E....................St. Paul
Senn, E. W......................Owatonna
§Serkland, J. C....................Rothsay
Sether, A. F. ....Ruthton
§Setzer, H. J........................St. Paul
§Seybold, W. D... ....Rochester
§Shandorf, J F ....Minneapolis
Shannon, W. R... ....St. Paul
Shaperman, Eva P.........Minneapolsi
§Shapiro, M. J...............Minneapolis
Sharp, D. V..................Minneapolis
*Shastid T. H..... ....Duluth
Shaw, A. W.......................Virginia
Shaw, H. A. ....Minneapolis
§Shedlov, Abraham..............Fosston
§Sheedy, C. L..... ....Austin
§Shellito, J. G. ....Rochester
†Shellman, J. L.....................
Pacific Palisades, Calif.
§Sheppard, C. G. ....Hutchinson
Sher, D. A..........................Virginia
Sheridan, Viola E. ......Rochester
§Sherman, C. H....................Bayport
Sherman, C. L.....................Luverne
§Sherman, H. T..............Cambridge
§Sherman, R. V..............Red Wing
Sherwood, G. E...................Kimball
§Shick, R. M......................Rochester
§Shimonek, S. W.................St. Paul
‡Shonyo, E. S...................Rochester
Short, C. A., Jr. ....Rochester
Short, Jacob.........................St. Paul
Shullenberger, C. C..........Rochester
Sicher, W. D. ....Rochester
Siegel, Clarence..................St. Paul
Siegel, J. S..........................Virginia
§Siegmann, W. C............Minneapolis
Silver, J. D....................Minneapolis
Simison, Carl ....Barnesville
§Simons, B. H......................Chaska
§Simons, F. J....................Swanville
†§Simons, J. H. ....Minneapolis
§Simons, L. T......................St. Paul
Simonson, D. B...............Minneapolis
§Simonton, K. MacL. ......Rochester
§Simpson, E. DeW. ......Minneapolis
§Sinamark, Andrew.............Hibbing
Singer, B. J.........................St. Paul
Sinykin, M. B.................Minneapolis
Siperstein, D. M. ....Minneapolis
Sisler, C. E...............Grand Rapids
†Sivertsen, Andrew................Nisswa
§Sivertsen, Ivar...............Minneapolis
§Sjostrom, L. E...................St. Peter
‡Skillern, P. G., Jr.............Rochester
§†Skinner, H. O...................St. Paul
§Skjold, A. C..................Minneapolis
Skoog-Smith, A. W. ....Mahnomen

Skroch, E. E. ....Rochester
§Slater, S. A...............Worthington
Slaughter, O. L. ....Rochester
§Slocumb, C. H...............Rochester
§Smisek, E. A.....................St. Paul
§Smisek, F. M. E...........Minneapolis
§Smith, Adam M.............Minneapolis
§Smith, Archie M...........Minneapolis
§Smith, B. A.........................Crosby
Smith, Baxter A., Jr. ....Minneapolis
§Smith, C. M........................Duluth
Smith, F. H......................Rochester
§Smith, F. L......................Rochester
§Smith, F. R. ....Rochester
§Smith, H. L.....................Rochester
Smith, H. R....................Minneapolis
§Smith, L. G....................Montevideo
§Smith, L. A........................Balaton
Smith, L. A.......................Rochester
Smith, Margaret I.........Minneapolis
†Smith, M. W....................Red Wing
§Smith, N. D.....................Rochester
§Smith, N. M..... ....Minneapolis
Smith, N. R..... ....Minneapolis
§Smith, O. O., Jr. ......Rochester
Smith, R. S. ....Rochester
§Smith, V. D. E....................St. Paul
Smith, W. R...............Grand Marais
§Snell, A. M......................Rochester
Snider, G. G.....................Rochester
Snyder, C. D. ....Kiester
§Snyder, G. W....................St. Paul
Snyker, O. E...........................Ely
Soderlind, R. T..............Minneapolis
§Sogge, L. L.......................Windom
§Sohlberg, O. I....................St. Paul
§Sohmer, A. E....................Mankato
§Solhaug, S. B...............Minneapolis
Solsem, F. N. S.... ..Ah-Gwah-Ching
Sommer, A. W......................Elmore
§Sommers, Ben....................St. Paul
§Sonnesyn, N. N.............Le Sueur
§Sorem, M. B......................St. Paul
§Sorum, F. T.........................Jasper
§Souster, B. B.....................St. Paul
§Spang, A. J.........................Duluth
§Spang, J. S.........................Duluth
§Spano, J. P...................Minneapolis
Spar, A. A.........................Rochester
Spicer, F. W.........................Duluth
§Spink, W. W.................Minneapolis
†Spittler, R. O...............New Richland
§Sprafka, J. M.....................St. Paul
§Sprague, R. G..................Rochester
§Spratt, C. N.................Minneapolis
‡Spray, Paul......................Rochester
Spurbeck, R. G.....................Cloquet
Spurzem, R. J........................Anoka
Stahr, A. C..........................Hopkins
Stam, John ....Worthington
§Stanford, C. E..............Minneapolis
Stangl, P. E.......................St. Cloud
§Stanley, C. R.................Worthington
§Starekow, M. D. ..Thief River Falls
§Stark, D. B. ....Rochester
‡Stark, F. M. ....Rochester
‡Starks, W. O....................Rochester
State, David ....Minneapolis
Stebbins, T. L................Minneapolis
§Steffens, L. A...................Red Wing
Stein, B. R. ....Rochester
Stein, K. E.........................Lakeville
Stein, R. J...............................Pierz
§Steinberg, C. L...................St. Paul
§Steiner, I. W......................Winona
§Stelter, L. A..................Minneapolis
§Stemsrud, H. L...............Alexandria
Stennes, J. L. ....Minneapolis
Stensgaard, K. L. ..Thief River Falls
Stenstrom, Annette E. T..Minneapolis
Stephan, E. L......................Hinckley
§Sterner, E. G......................St. Paul
§Sterner, E. R......................St. Paul
§Sterner, O. W.....................St. Paul
§Stevens, J. E., Jr. ....Rochester
Stevens, John......................Gonvick
Stevenson, B. M. ....Fulda
§Stevenson, F. W..............Faribault
Stewart, Alexander ....St. Paul
Stewart, N. E...St. Petersburg, Fla.
§Steward, R. I. ....Minneapolis
§Stickney, J. M..... ......Rochester
§Stillwell, W. C...................Mankato
§Stillwell, G. G..................Rochester
*§Stinnette, S. E...................St. Paul
Stokes, G. D......................Rochester
Stoesser, A. V... ....Minneapolis
§Stolpestad, A. H.................St. Paul
§Stolpestad, H. L. ....St. Paul
†Stomel, Joseph....Los Angeles, Calif.
Stout, H. A.......................Rochester
Stone, S. P....................Minneapolis
Stover, Lee.......................Rochester
†Strachauer, A. C.... .....Minneapolis

Stransky, T. W..................Owatonna
§Strate, G. E.......................St. Paul
§Strathern, C. S.................St. Peter
§Strathern, F. P.................St. Peter
Strathern, M. L.....................Gilbert
§Stratte, A. K....................Pine City
Stratte, H. C........ ......Windom
Straus, M. L........................St. Paul
§Strauss, E. C. ....Duluth
Street, Bernard ....Northfield
Strem, E. L. ....St. Paul
Strobel, W. G.......................Duluth
§Stroebel, C. F., Jr. ....Rochester
Strom, G. W. ....Minneapolis
Stromgren, D. T. ....Minneapolis
§Stromme, W. B. ......Minneapolis
§Strong, M. L....................Rochester
§Strout, G. E.................Minneapolis
Stuart, A. B........................Cloquet
Stuart, R. L.......................Rochester
§Studer, D. J......................Faribault
§Stuhr, J. W......................Stillwater
Sturley, R. F. ....St. Paul
§Sturre, J. R..................Minneapolis
§Stuurmans, S. H...........Minneapolis
§Sukov, Marvin ....Minneapolis
Sullivan, R. M..............Minneapolis
Sullivan, R. R. ....Minneapolis
§*Sundt, Mathias.........Minneapolis
†Sutherland, C. G............Rochester
Sutherland, H. N...........................Ely
Sutton, H. R......................Hoffman
§Svien, H. J.......................Rochester
Swanson, J. A......................St. Paul
Swanson, R. E..............Minneapolis
§Swanson, R. R..............Albert Lea
Swanson, V. F. ....Minneapolis
Swedberg, W. A...................Duluth
Swedenburg, P. A. ......Glenwood
§Sweetser, H. B., Jr.......Minneapolis
†Sweetser, H. B., Sr.......Minneapolis
§Sweetser, T. H.............Minneapolis
Sweitzer, S. E...............Minneapolis
§†Swendseen, C. G.........Minneapolis
§Swendson, J. J...................St. Paul
§Swensen, R. G.............North Branch
§Swenson, A. O....................Duluth
§Swenson, O. J....................Waseca
§Swezey, B. F.......................Buffalo

§Tangen, G. M................Minneapolis
§Tanquist, E. J................Alexandria
§Taylor, C. W.........................Duluth
‡Taylor, J. C......................Rochester
Taylor, J. H....................Minneapolis
§Teich, K. W. ....Duluth
§Teisberg, C. B...................St. Paul
Teisberg, J. E. ....St. Paul
Telford, V. J......................Litchfield
§Tenner, R. J..................Minneapolis
§Terrell, B. J....................Nopeming
§Tesch, G. H......................Elk River
§Thabes, J. A......................Brainerd
§Thabes, J. A., Jr................Brainerd
Thayer, E. A. ....Fairmont
§Thielen, R. D ....St. Michael
§Thomas, G. F................Minneapolis
Thomas, G. H................Minneapolis
Thomas, J. F.....................Rochester
§Thompson, Arthur ....Cokato
Thompson, C. O.............Hendricks
Thompson, F. A...................St. Paul
§†Thompson, G. J..............Rochester
§Thompson, H. B.......Fergus Falls
Thompson, V. C...Marine-on-St. Croix
§Thompson, W. H...........Minneapolis
Thomson, J. M. ....Minneapolis
Thoreson, M. C. Bernice..So. St. Paul
Thorson, S. B. ....Rochester
§Thysell, D. M................Minneapolis
Thysell, F. A............. Moorhead
Thysell, V. D........................Hawley
§Tibbetts, M. H.....................Duluth
Tice, G. I. ....Rochester
‡Tice, W. A. ....Rochester
Tifft, C. R...........................St. Paul
Tilderquist, D. L....................Duluth
§Tillisch, J. H...................Rochester
§Tingdale, A. C...............Minneapolis
Tingdale, Carlyle..................Hibbing
Titrud, L. A. ....Minneapolis
Todd, R. L.....................Minneapolis
Tofte, Josephine.............Minneapolis
Tomlin, H. M.....................Rochester
Tompkins, S. F..................Rochester
§Torgerson, W. B....................Oklee
Tosseland, N. E.. ....Rochester
§Trach, B. B....................Minneapolis
Tracht, R. R........................St. Paul
Traeger, C. A.....................Faribault
Travis, J. S. ....St. Paul
§Traxler, J. F....................Henderson
§Tregilgas, H. R..............So. St. Paul
Trommald, Gladys................Brainerd

§Troost, H. B.	Mankato
§Trow, J. E.	Minneapolis
Trow, W. H.	Minneapolis
Troxil, Elizabeth	Minneapolis
Trueman, H. S.	Minneapolis
Truesdale, C. W.	Glencoe
Trutna, T. J.	Silver Lake
Trytten, E. G.	Duluth
§Tudor, R. B.	Minneapolis
§Tunstead, H. J.	Minneapolis
§Tuohy, E. B.	Rochester
§Tuohy, E. L.	Duluth
§Turnacliff, D. D.	Minneapolis
Turner, J. L.	Rochester
§Tweedy, G. J.	Winona
Tweedy, J. A.	Winona
§Tweedy, R. B.	Winona
Tyler, S. H.	Raymond

§Ude, W. H.	Minneapolis
§Uhley, C. G.	Crookston
Uhrich, E. C.	Rochester
§Uihlein, Alfred	Rochester
Ulrich, H. L.	Minneapolis
§Underdahl, L. O.	Rochester
§Undine, C. A.	Minneapolis
Upshaw, Betty Y.	Rochester
‡Urban, D. A.	Rochester
§Urberg, S. E.	Duluth
Vadheim, A. L.	Tyler
Vadheim, L. A.	Tyler
§Valentine, W. H.	Tracy
§Van Cleve, H. P., Jr.	Dodge Center
Vandersluis, C. W.	Bemidji
Van Herik, Martin	Rochester
Van Meier, Henry	Stillwater
Van Rooy, G. T.	Thief River Falls
Van Valkenberg, J. D.	Floodwood
Varco, R. L.	St. Paul
Varney, J. H.	Rochester
Vaughan, L. M.	Rochester
Vaughan, V. M.	Truman
§Vaughn, L. D.	Rochester
Veirs, D. M.	St. Paul
Veirs Ruby J. S.	St. Paul
§Venables, A. E.	St. Paul
Veranth, L. A.	St. Cloud
§Vezina, J. C.	Mapleton
Vigran, Myron	Los Angeles, Calif.
Vik, A. E.	Minneapolis
Vik, Melvin	Onamia
Virnig, M. P.	Wells
§Vogel, H. A. L.	New Ulm
§Vogel, J. H.	New Ulm
Vollmer, F. J.	Winona
§Von der Weyer, W. H.	St. Paul

§Waas, C. W.	St. Paul
§Wadd, C. T.	Janesville
§Wagener, H. P.	Rochester
Wagner, N. W.	Graceville
§Wahlquist, H. F.	Minneapolis
§Wakefield, E. G.	Rochester
§Walch, A. E.	Minneapolis
§Waldron, C. W.	Minneapolis
§Walfred, K. A.	St. Cloud
§†Walker, A. E.	Duluth
§Walker, A. E.	St. Paul
§Wall, C. R.	Minneapolis
§Wallace, M. O.	Duluth
Waller, J. D.	Pine City
§Walsh, A. C.	Rochester
Walsh, F. M.	Minneapolis
Walsh, M. N.	Rochester
Walsh, W. T.	Minneapolis
§Walter, C. W.	St. Paul
Walter, G. F.	Farmington
§Walters, Waltman	Rochester
Wangensteen, O. H.	Minneapolis
‡Ward, B. H.	Rochester
Ward, P. A.	Minneapolis
§†Ward, P. D.	St. Paul
Warner, J. J.	Perham
Warren, C. A.	St. Paul
Warren, W. B.	Rochester
§Wasson, L. F.	Alexandria
Washko, P. J.	Rochester
§Watkins, C. H.	Rochester
Watkins, D. H.	Rochester
§Watson, A. M.	Royalton
§Watson, C. G.	Minneapolis
§Watson, C. J.	Minneapolis
†Watson, J. D.	Minneapolis
Watson, P. T.	Northfield
Watson, R. M.	Thief River Falls
§Watson, S. W.	Royalton
Watz, C. E.	St. Paul
§Waugh, J. M.	Rochester
Weaver, M. M.	Minneapolis
§Weaver, P. H.	Faribault
§Webb, E. A.	Minneapolis
Webb, Margaret A.	Rochester
§Webb, R. C.	Minneapolis
§Webber, F. L.	St. Paul
§Weber, H. M.	Rochester
Webster, L. J.	Battle Lake
§Weed, L. A.	Rochester
§Weir, J. F.	Rochester
§Weir, J. R.	Goodhue
§Weis, B. A.	St. Paul
Weisberg, Maurice	St. Paul
§Weiser, G. B.	New Ulm
Weisman, S. J.	Rochester
Weismann, R. E.	Rochester
Wellman, T. G.	Lake City
§Wellner, T. O.	Rochester
§Wells, A. H.	Duluth
Wells, G. R.	Rochester
§Wells, J. J.	Rochester
§Wells, W. B.	Jackson
§Wenner, W. T.	St. Cloud
§Wentworth, A. J.	Mankato
§Wenzel, G. P.	St. Paul
Wenzel, R. E.	Albert Lea
Werner, George	Minneapolis
Werner, O. S.	Cambridge
Werner, R. F.	Minneapolis
†West, Catherine C.	Minneapolis
§Westby, Magnus	Madison
Westby, Nels	Madison
§†Westerman, A. E.	Montgomery
§Westerman, F. C.	Montgomery
‡Westphal, K. F.	Minneapolis
§Westrup, J. E.	Lanesboro
§Wethall, A. G.	Minneapolis
Wetherby, Macnider	Minneapolis
§Wetzel, E. V.	Minneapolis
§Weum, T. W.	Minneapolis
§Wheeler, D. W.	Duluth
†Wheeler, M. W.	St. Paul
Whitacre, J. C.	St. Paul
White, A. A.	Minneapolis
White, E. F., Jr.	Nopeming
White, N. K.	Rochester
§White, S. M.	Minneapolis
§White, W. D.	Minneapolis
Whitehouse. F. R.	Rochester
Whitesell, F. B., Jr.	Rochester
§Whitesell, L. A.	Minneapolis
*Whitmore, F. W.	St. Paul
§Whitney, R. A.	Cambridge
§Whitson, S. A.	Albert Lea
Whittemore, D. D.	Bemidji
§Widen, W. F.	Minneapolis
Wiechman, F. H.	Minneapolis
Wilcox, A. E.	Minneapolis
Wilder, K. W.	Minneapolis
§Wilder, R. L.	Minneapolis
§Wilder, R. M.	Rochester
Wilder, R. M., Jr.	Minneapolis
§Wilken, P. A.	Minneapolis
Wilkinson, Stella L.	Faribault
§Wilkowske, R. J.	Owatonna
Will, C. B.	Bertha
Will, W. W.	Bertha
§†Willcutt, C. E.	Phoenix, Ariz.
Williams, A. B.	St. Paul
§Williams, C. A.	Pipestone
§Williams, C. K.	St. Paul
§Williams, H. L., Jr.	Rochester
Williams, H. O.	Lake Crystal
§Williams, J. A.	St. Paul
Williams, L. A.	Slayton
§Williams, M. M.	Ah-Gwah-Ching
Williams, M. R.	Cannon Falls
Williams, R. V.	Rushford
†Williams, Robert	Carthage, Ill.
§Williams, R. R., Jr.	Rochester
§Willius, F. A.	Rochester
§Wilmer, H. A.	Rochester
Wilmot, C. A.	Litchfield
Wilmot, H. E.	Litchfield
Wilson, C. E.	Blue Earth
§Wilson, F. C.	Austin
Wilson, G. T.	Rochester
Wilson, J. M.	Rochester
§Wilson, J. A.	St. Paul
§Wilson, J. V.	St. Paul
Wilson, J. W.	Rochester
§Wilson, R. B.	Rochester
§Wilson, R. H.	Winona
Wilson, V. O.	Minneapolis
§Wilson, W. E.	Northfield
§†Wilson, W. F.	Lake City
§Wiltrout, I. G.	Oslo
§Winchester, W. W.	Rochester
Wingquist, C. G.	Crosby
Winnick, J. B.	St. Paul
Winter, J. A.	Duluth
Winther, Nora M. C.	Minneapolis
Wipperman. F. F.	Minneapolis
§Wise, R. W. E.	Rochester
§Witham, C. A.	Minneapolis
Withrow, M. E.	International Falls
Wittich, F. W.	Minneapolis
Wittrock, L. H.	Watkins
§Wohlrabe, A. A.	Minneapolis
§Wohlrabe, C. F.	No. Mankato
§Wohlrabe, E. J.	Springfield
§Wold, K. C.	St. Paul
Wold, L. E.	Rochester
Wolf, A. H.	Minneapolis
*Wolf, W. W.	Minneapolis
Wolff, H. J.	St. Paul
Wolkoff, H. J.	St. Paul
§Wollaeger, E. E.	Rochester
Wolstan, , S. D.	Minneota
§Woltman, H. W.	Rochester
§Wood, H. G.	Rochester
‡Wood, W. D.	Rochester
Woodruff, C. W.	Chatfield
Word, H. L.	St. Paul
Workman, W. G.	Tracy
Wozencraft, J. P.	Rochester
Wray, W. E.	Campbell
§†Wright, C. D.	Minneapolis
*Wright, C. O.	Luverne
§Wright, R. H.	Austin
§Wright, S. G.	Minneapolis
Wright, W. S.	Minneapolis
Wunder, H. E.	Shakopee
Wyatt, O. S.	Minneapolis
Wynne, H. M. N.	Minneapolis

Yaeger, W. W.	Marshall
§Ylvisaker, R. S.	Minneapolis
§Yoerg, O. W.	Minneapolis
§Young, H. H.	Rochester
§Young, T. O.	Duluth
§Younger, L. I.	Winona
Youngren, E. R.	St. Paul

Zachman, A. H.	Melrose
Zachman, L. L.	St. Paul
Zaslow, Jerry	Rochester
§Zemke, E. E.	Fairmont
Zierold, A. A.	Minneapolis
§Zimmermann, H. B.	St. Paul
§Zinter, F. A.	Minneapolis
Ziskin, Thomas	Minneapolis
†Zlatovski, M. L.	Duluth
Zorn, E. L.	Erskine

◆ Reports and Announcements ◆

AMA CENTENNIAL

The annual meeting of the American Medical Association to be held in Atlantic City, June 9-13, 1947, will celebrate the 100th anniversary of the association.

The resignation of Dr. Olin West, president-elect of the AMA, because of ill health, will cause deep regrets in many quarters. The presidency of the association would have been a fitting culmination to the many years of service rendered to the national organization by Dr. West.

Announcement has been made that Dr. Edward L. Bortz, of Philadelphia, at present a vice president, will succeed Dr. West and will be inaugurated as president of the association in June.

Dr. Bortz was born in Greenberg, Pennsylvania, February 10, 1896, and now lives in Philadelphia. He became a Fellow of the American College of Physicians in 1929, was certified by the American Board of Internal Medicine in 1937, and in 1942 was made a member of the Council on Scientific Assembly of the AMA. He has been a delegate to the AMA since 1945 and is chairman of the Committee on National Emergency Medical Service of the association. During World War II, Dr. Bortz served as captain in the U. S. Naval Medical Corps.

AMERICAN CONGRESS OF PHYSICAL MEDICINE

The American Congress of Physical Medicine will hold its twenty-fifth annual scientific and clinical session September 2, 3, 4, 5 and 6, inclusive, at the Hotel Radisson, Minneapolis. Scientific and clinical sessions will be given the days of September 3, 4, 5 and 6. All sessions will be open to members of the medical profession in good standing with the American Medical Association.

In addition to the scientific sessions, the annual instruction courses will be held September 2, 3, 4 and 5. These courses will be open to physicians and the therapists registered with the American Registry of Physical Therapy Technicians.

For information concerning the convention and the instruction course, address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

NATIONAL GASTROENTEROLOGICAL ASSOCIATION

The National Gastroenterological Association will hold its 12th annual convention and scientific sessions at the Hotel Chelsea in Atlantic City, N. J., on June 4, 5, 6, 1947, affording those interested in attending the centennial celebration of the American Medical Association and the meeting of the National Gastroenterological Association a chance to be present at both.

The program will consist of eighteen papers on various phases of gastroenterology and allied subjects. Among those presenting papers will be: Dr. Manuel G. Spiesman, Chicago, Ill.; Dr. Emanuel M. Rappaport, New York, N. Y.; Dr. L. C. Sanders, Memphis, Tenn.; Dr. Herman Osgood, Boston, Mass.; Dr. James P. Campbell and Dr. Harold A. Grimm, Wheaton, Ill.; Dr. Edward T. Whitney, Boston, Mass.; Dr. F. Steigmann and Dr. Hans Popper, Chicago, Ill.; Dr. Lester M. Morrison, Los Angeles, Calif.; Dr. M. E. Steinberg, Portland, Oregon; Dr. John E. Cox, Memphis, Tenn.; Dr. George Miley, Philadelphia, Pa.; Dr. Tom D. Spies, Birmingham, Ala.; Dr. Fernando Milanes and Dr. Guillermo Garcia Lopez, Havana, Cuba, and Mr. R. Johnson, Birmingham, Ala.; Dr. Donald Cook, Chicago, Ill.; Dr. Norman Jolliffe, New York, N. Y.; Dr. Matthew T. Moore, Philadelphia, Pa.; Dr. Verne G. Burden, Philadelphia, Pa.; Dr. Thomas J. Fitz-Hugh, Jr., and Dr. A. J. Creskoff, Philadelphia, Pa.

At the luncheon round-table conference Thursday, June 5, 1947, Dr. Hyman I. Goldstein of Camden, N. J., will speak on "The History of Gastroenterology and the Development of this Specialty in America."

At the annual banquet to be held on Thursday evening, June 5, 1947, the winner of the National Gastroenterological Association's 1947 Cash Prize Award Contest for the best unpublished contribution on gastroenterology or an allied subject, will receive the prize of $100.00 and a Certificate of Merit. The guest speaker of the evening will be Dr. Homer T. Smith of the New York University College of Medicine whose subject will be "Plato and Clementine."

Program and further details may be obtained from the National Gastroenterological Association, 1819 Broadway, New York 23, N. Y.

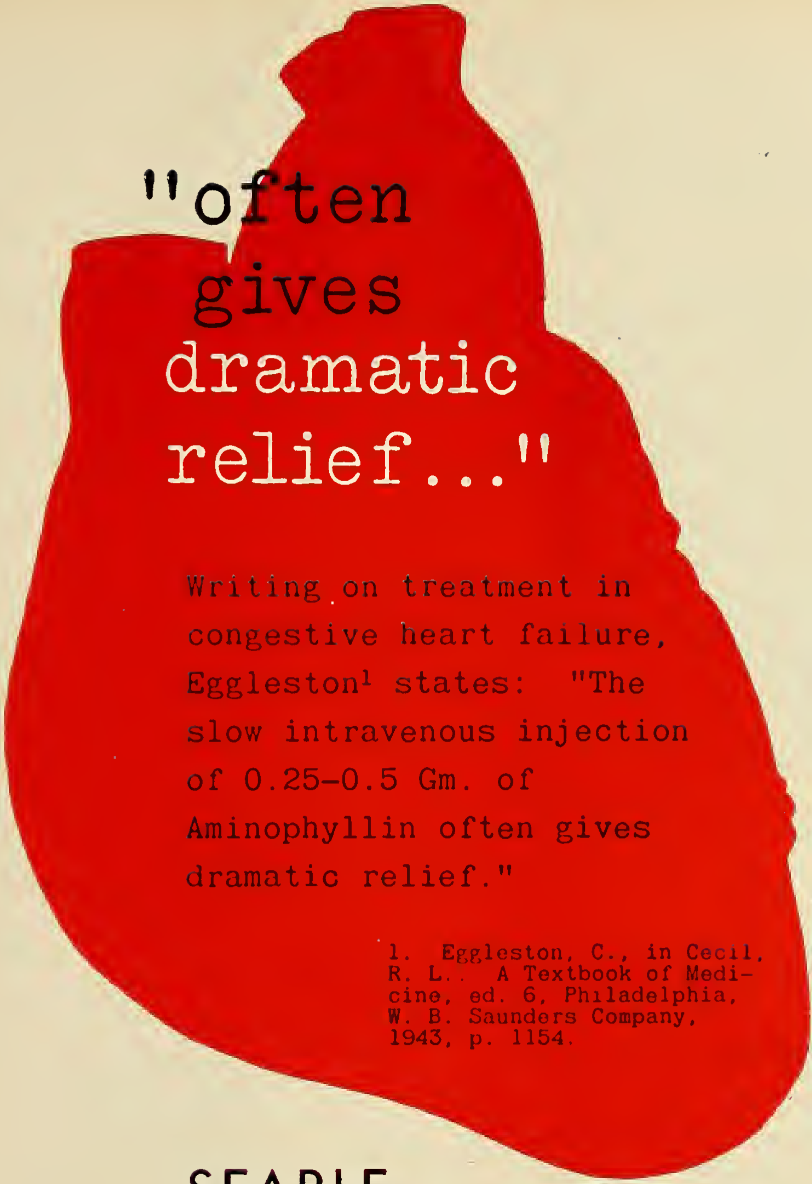
AMERICAN COLLEGE OF PHYSICIANS

During March the American College of Physicians held two one-week postgraduate courses at Rochester, one dealing with peripheral vascular disease, including hypertension, and the other concerned with rheumatic diseases. The courses were under the direction of Dr. E. V. Allen and Dr. P. S. Hench, respectively, both of Rochester. Approximately seventy-five members of the American College of Physicians came from all parts of the United States to hear lectures and discussions presented by guest speakers from throughout the nation.

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Two $100 prize awards are offered annually by the Central Association of Obstetricians and Gynecologists to any accredited physician, research worker or medical student within the confines of the Central Association, which includes Minnesota. One award is for the best investigative work, and the other for the best clinical work, in the field of obstetrics and/or gynecology. Pa-

(Continued on Page 572)



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[1] Eggleston, C., in Cecil, R. L.. A Textbook of Medicine, ed. 6, Philadelphia, W. B. Saunders Company, 1943, p. 1154.

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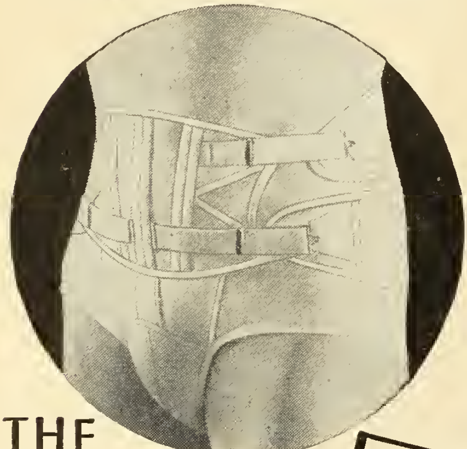

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CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

(Continued from Page 570)

pers submitted for either award must be in the hands of the secretary of the organization not later than August 15, 1947. Further information may be obtained from Dr. John I. Brewer, secretary-treasurer of the association, 104 South Michigan Avenue, Chicago, Illinois.

MINNESOTA PATHOLOGICAL SOCIETY

The regular meeting of the Minnesota Pathological Society was held in the Medical Science Amphitheater of the University of Minnesota Medical School on April 22, at 8:00 P.M. Dr. G. T. Evans and Dr. D. T. Kaung presented a discussion of the topic, "A Consideration of the Action of Insulin."

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

Members of the Minnesota Society of Neurology and Psychiatry attended a one-day clinic-lecture conference at Rochester on May 3.

The program began at 8:00 A.M. with surgical clinics conducted by the Mayo Clinic neurosurgical staff in the operating rooms at St. Mary's Hospital. At 10:30 A.M. the lecture part of the program started. The following subjects were presented:

"Classification of Nystagmus" (with motion picture demonstration)—Dr. C. W. Rucker.

"Comments on Infantile Muscular Myopathies"—Dr. Mary E. Giffin.

"Misleading Rhythms in the Electroencephalogram in the Diagnosis of Tumors of the Brain"—Dr. R. G. Bickford.

"The Present Status of Thymectomy in the Treatment of Myasthenia Gravis"—Dr. L. M. Eaton.

"Metastatic Brain Abscess"—Dr. E. M. Gates.

At 12:30 P.M. the group was served a luncheon at the Mayo Foundation House, after which Dr. F. J. Braceland spoke on "European Neuropsychiatry."

MINNEAPOLIS SURGICAL SOCIETY

Newly elected officers of the Minneapolis Surgical Society are Dr. L. Haynes Fowler, president; Dr. Carl O. Rice, vice president; Dr. Rudolph E. Hultkrans, treasurer, and Dr. Theodore H. Sweetser, council president.

WASHINGTON COUNTY

The Washington County Medical Society met April 8, 1947, and was addressed by Dr. Oswald S. Wyatt of Minneapolis on the subject, "Appendicitis in Children."

Two visitors were present: Captain Scott Swisher, Jr., of Bayport, who was home on terminal leave and will soon begin a fourteen months' residency at the Strong Memorial Hospital at Rochester, New York, and Dr. Edgar C. Bunseth, who is now associated with Dr. G. McC. Ruggles of Forest Lake, Minnesota.

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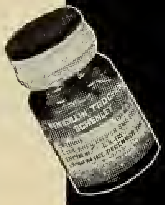

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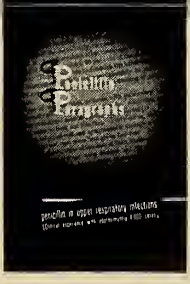

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WOMAN'S AUXILIARY

LAST CALL!

Last Call for reservations for the Twenty-fourth Annual Convention of the Woman's Auxiliary to the American Medical Association, which will be held at Haddon Hall Hotel, Atlantic City, New Jersey.

Atlantic City Extends a Hearty Welcome to You.

HENNEPIN COUNTY

To raise funds for its various philanthropies, the Woman's Auxiliary to the Hennepin County Medical Society sponsored their annual Easter Monday Benefit party at the Calhoun Beach Club on April 7. Mrs. Harold G. Benjamin was general chairman with Mrs. Ernest L. Meland as co-chairman. Mrs. C. L. Norman Nelson was in charge of tickets.

Luncheon was served at 1:30 p.m., followed by a delightful Dayton's Style Show, and a short drama entitled, "If Men Played Bridge as Women Do," presented by the North Star Drama Guild.

RAMSEY COUNTY

The Ramsey County Medical Auxiliary was the first Red Cross group in Saint Paul, working in the current drive, to complete solicitation in the campaign to raise $200,000, it was announced by Mr. Douglas K. Baldwin, Saint Paul and Ramsey County, campaign chairman.

On Monday, March 24, the Auxiliary entertained about three hundred guests at its annual guest day tea and program. Representatives of many women's organizations were present, including Mrs. Luther Youngdahl of Minneapolis and Mrs. Melvin S. Henderson of Rochester.

Preceding the tea, Dr. Raymond N. Bieter, head of the Department of Pharmacology at the University of Minnesota, talked on newly discovered drugs and how they are helping the medical profession in its fight against disease.

OLMSTED-HOUSTON-FILLMORE-DODGE COUNTY

At the quarterly meeting of the OHFD Auxiliary in March, Mrs. Russell M. Wilder, a member of the National Board on Juvenile Delinquency, and Dr. Maurice N. Walsh from the Department of Neurology at the Mayo Clinic, collaborated in presenting a program on juvenile delinquency. Officers of the Parent-Teacher Association and the principals of the city schools were invited guests. The program and discussion embraced both national and local problems and was well received.

The Auxiliary is sponsoring the cancer essay and poster awards in all Junior and Senior High Schools in the four counties.

Several members are working on the April drive for funds by the county cancer society. Small informal groups are organizing to make cancer dressings.

The Auxiliary is holding open house for the doctors' wives in the outlying counties who wish to accompany their husbands to Rochester on the evenings when the Medical Society holds its meetings.

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Tablet, *no heating* method of detection of urine-sugar.

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In Memoriam

JAMES LINN ADAMS

Dr. James L. Adams, for thirty-six years a general practitioner at Morgan, Minnesota, died in March, 1947, at Van Nuys, California, whither he had moved on retiring in 1928. He was eighty-seven years old, and he and Mrs. Adams had recently celebrated their golden wedding.

Dr. Adams obtained his M.D. degree at the Missouri Medical College in 1886. He came to Morgan, Minnesota, in 1892, and prided himself on being a "real horse and buggy doctor."

In 1941, he returned to Morgan when grateful citizens unveiled a granite monument with a bronze plaque bearing his likeness in Vernon Park. The legend on the monument reads: "James L. Adams, a Pioneer Doctor. Service to His People Filled the Life of This Man, Without Thought of Personal Gain."

Dr. Adams is survived by his widow; three daughters —Frances of Long Beach, and Mildred and Marian of Carmel, California; and one son, James, Jr., of Olivia, Minnesota.

CLEMENT CAMPBELL BLAKELY

Dr. C. C. Blakely of Barnum, Minnesota, passed away on March 29, 1947, following a stroke. He was seventy-one years of age. He had practiced medicine and had been active in the social life of Barnum since 1920.

Dr. Blakely was born in Foo Chow, China, March 13, 1876, the son of Presbyterian missionaries in that field. In his early childhood, his family returned to America and lived in Neenah, Wisconsin, where he attended high school. Later, he attended Ripon College and obtained his medical degree from the University of Minnesota in 1909. After spending a year in pathology at the University, he interned at Ancker Hospital, Saint Paul, and began practicing at Saint Peter in 1911. He entered the army in 1918, serving as captain in the medical corps, 183rd Depot Brigade.

Following his discharge from the army, Dr. Blakely came to Barnum in January, 1920, looking for a location. The community, without a doctor, was in the midst of a scarlet fever epidemic, and he was induced to stay. This was two years after the disasterous Moose Lake-Kettle River forest fire, and there were still many reminders of that tragedy in ruined dwellings and burned-over woods. As a result of the fire, practice at Barnum was rather primitive. The roads being poor, the horse and buggy, bobsled, and even snow shoes were resorted to. He at one time invested in a snowmobile which would make thirty miles an hour. With the advent of the big county snowplows, the snowmobile was given up. The doctor many times had reason to be grateful to the snowplow crews who always responded promptly to a call to open up snowfilled roads, so he could reach a patient in an emergency.

During his residence at Barnum, Dr. Blakely was active in various lines of endeavor. He was a member of the Board of Education for twelve years, serving as its president for several terms; president of the Parent-Teachers Association; trustee of the Presbyterian church for six years; and member of the Commercial Club. He was also a member of the A.F. and A.M., the IOOF, the American Legion, St. Louis County Medical Society, the Minnesota State and American Medical Associations.

Dr. Blakely was a very successful practitioner. His life was not an easy one—a country doctor's life seldom is. But he enjoyed his work and had the satisfaction of feeling that he was working for the good of mankind. As one former patient wrote, "He has fought the good fight and finished his course."

GEORGE CLAUDE DITTMAN

Dr. George C. Dittman was born in Saint Paul, Minnesota, on October 9, 1882, and died after a short illness, from heart disease, on January 9, 1947.

He attended the Webster grade school, Central High School in Saint Paul, and received his degree of doctor of medicine from the University of Minnesota in 1904. After completing his internship at Ancker Hospital in Saint Paul in 1905, he practiced for a year in South Saint Paul. Not satisfied with his work there, he went abroad and studied in his specialty in eye, ear, nose and throat diseases. He returned in 1907 and practiced his specialty for two years until 1909. At that time he became associated with his uncle, the late Dr. Joseph Bettingen, with whom he remained in partnership until Dr. Bettingen's death in 1921, after which he continued in his specialty alone until his death in January, 1947.

Dr. Dittman served in World War I in the Medical Corps. He was a member of the staff of St. Joseph's Hospital. He was an active member of the Ramsey County Medical Society, Minnesota State Medical Association, and was a Fellow of the American Medical Association.

Surviving Dr. Dittman is his sister, Miss Georgiana Dittman of Saint Paul.

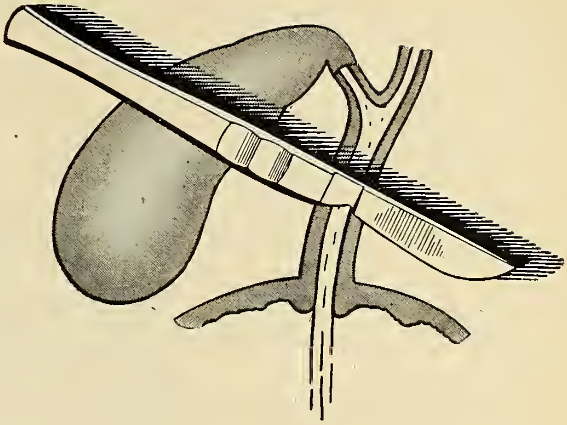
KARL DEDOLPH, M.D.

FLOYD LESTER GILLES

Dr. F. L. Gilles, Minneapolis, died of a heart attack as he was entering his car in front of Fairview Hospital on April 24, 1947. He was fifty-five years of age.

Dr. Gilles was born in Sherburne, New York, May 27, 1891. He attended high school in Shortsville, New York, and obtained his medical education from Syracuse College, receiving the degrees of B.S. and M.D. in 1917. He interned at Asbury Hospital, Minneapolis, and served with the Medical Corps of the Army, being discharged in March, 1919. He was associated with Dr. A. E. Wilcox from May, 1919, until October, 1920, and has since practiced surgery, having been on the Fairview and Asbury hospital staffs.

Dr. Gilles was a past master of Khurum Lodge, A.F. and A.M., and a member of the Scottish Rite consistory, Zuhrah Temple Legion of Honor. He was also a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations.



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Dr. Gilles is survived by his wife; a son, Paul Frederick of Minneapolis; a daughter, Mrs. Robert Wood of Jamestown, North Dakota; and his mother, living in New York.

CARL M. JOHNSON

The death of Dr. Carl M. Johnson on February 1, 1947, removed one of the state's leading physicians, a valued Councilor of the State Medical Association, and an outstanding citizen of Dawson, Minnesota.

Carl Johnson was born July 27, 1882, on a farm northwest of Pelican Rapids, a spot chosen by his father, John M. Johnson, when he came to that region as the first settler.

It is always a matter for debate whether environment or heredity is most important in formation of character; this in his case was settled, by giving him both. His parents were outstanding citizens for over fifty years—very successful farmers, pillars of the church, and his father's advice was sought by large numbers throughout his long life. Carl carried these ideals absorbed in youth to the end.

Carl Johnson was educated in the Park Region Lutheran College, Fergus Falls; Hamline University, and the University of Minnesota, graduating in medicine in 1910. He interned in St. Barnabas Hospital, and took postgraduate work in New York. Following this, he was associated with Dr. L. G. Smith, Montevideo, until 1916, when he joined his brother, Herman, in Dawson.

This partnership was ideal. Most, who know, agree that Herman was one of Minnesota's great men, possessing a remarkable mind, fine judgment, unlimited drive, high ideals and character. Herman would have dominated anywhere he chose, but was satisfied in giving his community the best in medical and surgical service, leading the citizens on the right road in civil and political affairs, and acting as an outstanding advisor to the Minnesota State Medical Association; refusing through his whole life to accept public office.

Carl, though having equal ability, was Herman's complement—thoughtful, very slow in making a decision, kindly and deliberate, never irritable. It was Carl who always had time to discuss problems with anyone in the city or hospital, thus becoming the greatly valued advisor of the community. Though generous, he was wise in finance; at the time of his death being president of the Northwestern State Bank of Dawson, president of the City Council, and chief of staff of the Dawson Community Hospital.

The high standards set by Herman and Carl will be carried on by two cousins and Dr. J. G. Boody, a valued partner in practice for many years.

Vilhem (Bill), Herman's son, who greatly distinguished himself in the last war, becoming a Major, is now carrying the chief burden. He will soon be joined by Curtis, Carl's son, who is now finishing his internship.

Besides Curtis, Carl leaves Douglas and Dorothea, fine young people still in college, and Mrs. Johnson, formerly Anna Loberg.

It can be said that Carl lived a full and useful life, dying with as few reasons for regrets as it is humanly possible.

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LEE W. POLLOCK

Dr. Lee W. Pollock, head of the sections of medicine at the Mayo Clinic at Rochester, died following a stroke February 2, 1947.

Dr. Pollock was born at Evansville, Minnesota, February 7, 1887. He attended high school at Rochester and for fifteen months after graduation he worked in the laboratory at St. Mary's Hospital under the tutelage of Dr. L. B. Wilson. His interest in laboratory work continued and while he was an undergraduate at the University of Minnesota his spare hours and summer vacations throughout his course were spent in the pathologic laboratory under Dean F. F. Wesbrook, Dr. H. E. Robertson, Dr. R. H. Mullin and others. He received the degrees of B. S. in 1911 and M.D. in 1912 from the University of Minnesota. After an internship in City and County Hospital (later Ancker), St. Paul, he practiced in Warren, Minnesota, for about a year and then went to the Mayo Clinic in November, 1914. During World War I he was a first lieutenant and served on the Board of Examiners for tuberculosis in various army camps. He returned to the clinic and in 1925 was made head of a section. He was also an assistant professor of medicine in the Mayo Foundation.

In the clinic his work was always associated with Dr. A. H. Logan and for a number of years he performed the proctoscopic examinations and supervised the tedious treatment of ulcerative colitis and other medically treated colon conditions.

Because of his persistence in his diagnostic work and his refusal to dismiss a patient until he himself was satisfied, his pleasant personality and his patience, a great number of patients always sought him on their return visits. He was a great reader on medical subjects and always purchased his own books so that he could utilize any free moments available from the care of his patients. He was considered a good teacher by the fellows who were fortunate enough to come under his influence and he wrote well but infrequently. His rather retiring disposition deterred him from participating in medical meetings.

His hobbies were numerous. As a student his chief delight was playing baseball, and after college he was an ardent follower of the University of Minnesota football team. He always liked dogs and owned several good ones. In 1926 he acquired some wooded hillside land in the outskirts of Rochester and on this project expended much energy and satisfied several urgent impulses to produce the best of whatever he undertook. He had chickens, and being on the dietetic committee of the clinic he early used his training to formulate a ration for his laying hens which produced satisfying results in growth of the birds and egg production. In 1926 crude cod liver oil was added to the chicken mash as well as the milk fed to his prize Jersey calves. During the year preceding his death, his few excellently bred Jersey cows topped the county records in milk production and butterfat.

He always loved to see things grow. His interest began with apples and plums, continued on into iris, lilacs and gladiolus. His greatest effort was in his prize peonies. On his small plat of land there were between 6,000 and 7,000 plants with more than 500 named varieties. Many prizes were acquired for his beautiful blooms at the peony shows.

He married Addie Baihly of Rochester on June 14, 1916, and is survived by his wife and a sister, Mrs. Frank Jacobs, of Rochester, and a host of friends.

He was a member of the Southern Minnesota Medical Association, the American Medical Association, the Alumni Association of the Mayo Foundation and Sigma Xi.

THOMAS HALL SHASTID

Dr. Thomas H. Shastid, a practicing ophthalmologist and author in Duluth since 1920, died February 15, 1947, at the age of eighty.

Born in Pittsfield, Illinois, July 19, 1866, Dr. Shastid attended the local schools and Eureka College, Illinois. He obtained his medical education at Columbia University and the University of Vermont, obtaining his M.D. degree in 1888. He also obtained a B.A. degree from Harvard in 1893, an M.A. from the University of Michigan in 1901, and an LL.B. from the same university in 1902. Postgraduate work was taken also at the Postgraduate Medical School in New York and in Vienna on two occasions.

Dr. Shastid was indeed a remarkable individual, and during his long life he took an active and combative interest in anything and everything pertaining to medicine and to his chosen specialty of eye, ear, nose and throat. For many years he assisted in the editing and the collecting of data pertaining to the American Encyclopedia of Ophthalmology and its publication.

Prior to coming to the Head of the Lakes (Superior and Duluth) he traveled about considerably, and practiced in several cities of Illinois: Pittsfield, Galesburg, Fairfield, Charleston and Marion. He is credited with more than 3,000 publications. Two thick tomes, copiously illustrated, dealing with what he called his "first and second lives," were published by him. Much of the information concerned in these books is extremely personal but it has considerable historical value because it connotes the gradual development of medicine in its various fields within that extensive period of sixty years in which he was student, practitioner, teacher and specialist. Not a little of the material covered in these books illustrates the limitless bickering and argument, not to say controversy, written and spoken just prior to the turn of the century, when doctors were finding their way to more congenial associations and the medical societies to more scientific pursuits. As an author, he went into great detail concerning his own confusing illnesses and the variety of approaches and diagnostic impressions, as, for example, when violent indigestion persecuted him at great length, only to be ultimately solved by an abdominal operation and an exploration. In later years he had a great fear of "sinus disease." He would frequently attend a medical meeting, where the air in the room was never too satisfactory, wearing a heavy fur cap pulled well down over his ears because, as he stated, "the slightest cold drives me fran-

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tic." His writing was by no means confined to medical fields, and one of his books, *Simon of Cyrene,* was very well received and had excellent mention from the critics about two decades ago.

His habits of living in later years became intensely individual. He arose about noon, and then went to his office, where he saw many people, for he had developed an unusual reputation in rather complicated optometry. In addition, he had some unusual avocations. One of these was to go out to the zoo and make ophthalmoscopic examinations of the various animals, including fish, birds, snakes, and in fact any other living creature submitting to approach. He made extensive contributions relative to the pupil, both of human beings and animals.

SHELBY E. STINNETTE

Dr. Shelby E. Stinnette died March 27, 1947, in Los Angeles, California. The cause of death was coronary thrombosis, complicated by cerebral thrombosis.

Dr. Stinnette was born August 10, 1886, at Louisville, Kentucky. He was graduated from the Louisville Male High School in 1907, the Kentucky School of Pharmacy in 1909, and Hahnemann Medical College of Chicago in 1913, following which he came to Saint Paul.

He was first associated with Dr. S. G. Cobb at 365 Prior Avenue. In 1920 he opened offices with Dr. Hugh Beals at 322 Hamm Building, where he continued to practice until his retirement in 1946.

He was a member of Ramsey County Medical Society and Minnesota State Medical Association, Triune Lodge No. 190, A.F. and A.M.; Palmyra Chapter No. 55, Royal Arch Masons; the Saint Paul Athletic Club, Kiwanis Club, the Automobile Club and the Midway Club. He was a trustee of Trinity Methodist Church and a staff member of Midway and Bethesda Hospitals.

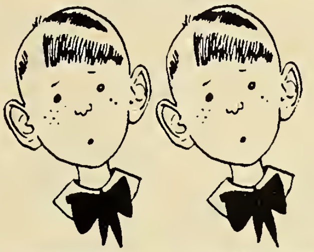
Dr. Stinnette was a man devoted to his family and his patients, as they were to him. He lived cleanly and honestly, and from those who knew him he achieved an affection which is given to few men. He loved his home and was a genial and charming host. He loved the out-of-doors, and there could be no better fishing or hunting companion. He was a faithful servant of his church. These things made him an outstanding member of his profession.

He is survived by his wife; two daughters, Mrs. W. D. Schmidt of Saint Paul, and Mrs. H. F. Wilenchek of Atlanta, Ga.; two brothers, a sister, and four grandchildren.

There is peculiar pathos in the fact that Dr. Beals, with whom Dr. Stinnette shared offices for twenty-six years chanced to be near when Dr. Stinnette was stricken and was in constant attendance during the last days of his illness.

Charles C. Cooper, M.D.

IDENTICAL TWINS



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Of General Interest

On March 29, Dr. Paul R. Lipscomb and Dr. G. B. Logan, Rochester, participated in a clinic for crippled children at Worthington.

* * *

Dr. H. H. Albrecht Lindstrom, purchased the Chisago Lakes Clinic in Chisago City, March 14, taking over the interests of Dr. C. A. Peterson.

* * *

A recent addition to the staff of the River Falls Clinic is Dr. R. R. Davis, formerly of Wisconsin General Hospital, Madison, Wisconsin.

* * *

Dr. Henry J. Wynsen, after a year's residency in medicine at Ancker Hospital, Saint Paul, has entered a residency in pathology at St. Mary's Hospital, Duluth.

* * *

Dr. T. R. Fritsche, New Ulm, was elected president of the Minnesota Academy of Ophthalmology and Otolargngology at a meeting held in Minneapolis on March 14.

* * *

Dr. J. C. Crabtree and Dr. Alfred Kapsner, Princeton, have purchased the former Ewing Building in that city and are having it remodeled to house a new medical clinic.

* * *

After nine years of medical and surgical practice in Two Harbors, Dr. Roland F. Mueller has moved to Lincoln, Nebraska, where he is now a surgeon with the Olney Clinic.

* * *

While Dr. N. F. Musachio, Foley, attended a short course in surgery in Chicago, Illinois, in late March, his practice was conducted by Dr. John H. O'Leary, formerly of Minneapolis.

* * *

At a meeting of the Chicago Medical Society in Chicago in the early part of March, Dr. H. W. Meyerding, Rochester, received the first award for his scientific exhibit on "Benign and Malignant Tumors of Bone."

* * *

Speaking at a Rotary Club meeting in Fergus Falls on March 12, Dr. H. K. Helseth of that city pointed out the disadvantages of socialized medicine by discussing the reasons for which the medical and dental professions are opposed to medical regimentation.

* * *

Dr. Victor Johnson, recently appointed director of the Mayo Foundation, to take office in October, has arrived in Rochester and has joined the staff of the Foundation as professor of physiology, in order to begin the task of learning the duties of director.

* * *

Seven army medical officers are attending continuation courses this spring at the University of Minnesota, it was recently announced. When the officers' training is completed, they will assist the army in setting up basic science courses at service hospitals for the training of regular officers in the various specialties.

* * *

Dr. Gordon R. Kamman, Saint Paul, addressed the Polk County (Wisconsin) Medical Society at its monthly meeting held in Stillwater on March 20. Dr. Kamman's subject was "Neuropsychiatry in General Office Practice."

* * *

During the annual meeting of the American Medical Association in Atlantic City, the Alumni Association of the Jefferson Medical College will hold a smoker at the Traymore Hotel, Atlantic City, on Wednesday, June 11, 1947.

* * *

Speaking at the Surgeon General's Conference at Walter Reed General Hospital in Washington, D. C., March 20, was Dr. F. H. Krusen, Rochester, who discussed "The Developments of the Modern Era of Physical Medicine as Observed During the Past Two Decades."

* * *

Dr. Carleton W. Leverenz has become associated with Dr. Harry Oerting, with offices at 914 Lowry Medical Arts Building, Saint Paul, specializing in internal medicine. A graduate of the University of Illinois, Dr. Leverenz served his internship and a residency at Ancker Hospital, Saint Paul.

* * *

Dr. A. M. Snell, Rochester, spoke at the April 7 meeting of the Hennepin County Medical Society on the subject, "Some Clinical and Physiologic Aspects of Portal Cirrhosis." While in Minneapolis, he also was a speaker at the University of Minnesota Center for Continuation Study, where his topic was "Some Current Problems in the Field of Gastronenterology."

* * *

At the eleventh annual meeting of the Saint Paul Surgical Society, held April 19 at the Minnesota Club in Saint Paul, 158 members and guests of the society heard Dr. Karl Meyer, professor of surgery at Northwestern University Medical School, speak on the subject, "The Early Ambulatory Treatment of the Postoperative Patient."

* * *

April showered lecture duties upon Dr. Philip S. Hench, Rochester, who started the month by journeying to Portland, Oregon, to deliver three Sommer Memorial lectures. From there he went to Denver, Colorado, where he gave four lectures at the Fort Logan Veterans Hospital and at the University of Colorado School of Medicine.

* * *

Among the speakers at a meeting of the Missouri State Medical Association at Kansas City in the first week in April were Dr. D. R. Nichols and Dr. A. M. Olsen, Rochester. Dr. Nichols presented a paper entitled, "Chemotherapy as Used in Medical Conditions," while the subject of Dr. Olsen's address was "Diagnosis and Treatment of Bronchial Lesions."

* * *

April 3 was the ninety-first birthday aniversary of Dr. Christopher Graham, Rochester, and was marked by an all-day celebration that included the presentation of a giant birthday cake at a Rotary Club meeting, a constant flow of telegrams, telephone calls and gifts, and an evening dinner party attended by all members of his family.

* * *

The president of the Northwestern Pediatric Society, Dr. George C. Kimmell, Red Wing, has endorsed the campaign of the Minnesota American Legion to establish a research professorship for rheumatic fever and heart disease in connection with the proposed heart hospital at the University of Minnesota. Goal of the campaign is $500,000.

* * *

Dr. Bruce Boynton, who formerly practiced in Park River, North Dakota, has moved to Ada and opened an office there. Dr. Boynton graduated from the University of Minnesota Medical School in 1944, after which he served in the United States Navy. Upon discharge in February, 1946, he began his medical practice in Park River.

* * *

Dr. J. Arthur Myers, Minneapolis, was a member of a fifteen-man delegation from the United States to the seventh Pan-American Congress on Tuberculosis which began its meeting on March 17 at Lima, Peru. The delegation was headed by Dr. Herman E. Hilleboe, assistant surgeon general of the United States Public Health Service.

* * *

Dr. John P. Cooper, formerly an industrial surgeon at the Minneapolis-Moline Company in Hopkins, has opened offices in the Tonka Building in Excelsior. A graduate of the University of Minnesota Medical School, Dr. Cooper spent two years at the Hospital of the Good Samaritan, Los Angeles, California, before serving in the navy during World War II.

* * *

Dr. Bernard Zondek, professor of gynecology at the Hebrew University in Jerusalem, and co-discoverer of the Aschheim-Zondek pregnancy test, spoke at the University of Minnesota Center for Continuation Study on April 19. He addressed approximately seventy Minnesota doctors recently discharged from the military services, speaking on "Observations on Female Sterility."

* * *

The American Bureau for Medical Aid to China, a co-operating agency of United Service to China, has provided for 125 fellowship awards annually, to enable Chinese doctors, dentists, public health experts, and nurses to engage in advanced studies in leading American universities. After a year of study they will return to China to join the faculties of six national medical colleges that have been selected to receive this assistance.

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The Royal Flemish Academy of Medicine of Belgium elected Dr. Frank D. Mann, Rochester, as a foreign honorary member of the organization, at a meeting of the academy in Brussels on November 25, 1946. The election of Dr. Mann was approved by a Decree of the Regent of the Kingdom under the date of January 28, 1947, promulgated in the *Belgian State Journal* of February 19, 1947.

* * *

Remodeling of the long-unused Crosby Hotel building, Crosby, was completed early in April to provide quarters for a new medical clinic opened by Dr. L. N. Dale and Dr. James Nixon of that city. The clinic consists of nine rooms on the ground floor of the building, including offices for both doctors, examining rooms, an x-ray room, darkroom, laboratory and small operating room.

* * *

Acceptance of Dr. K. W. Anderson, Minneapolis, of the newly appointed office of chairman of the Health and Medical Care Division of the Minneapolis Council of Social Agencies, has been announced. Dr. Anderson, a past president of the Minneapolis Academy of Medicine, is the medical directorof the Northwestern National Insurance Company and an associate professor of medicine at the University of Minnesota.

* * *

More than forty public health specialists in the Northwest attended the Middle States Region Health Educators' Conference at the University of Minnesota Center for Continuation Study on April 25 and 26. Health films were shown and panel discussions were held during the business sessions. Governor Luther Youngdahl spoke on "Conservation of Human Resources and Health Education" at the conference banquet on April 25.

* * *

Formerly of Saint Paul, Dr. R. W. Maertz has begun practice in Goodhue, replacing Dr. James R. Weir of that city.

Dr. Maertz, a graduate of Creighton College, Omaha, Nebraska, interned at St. Joseph's Hospital, Saint Paul.

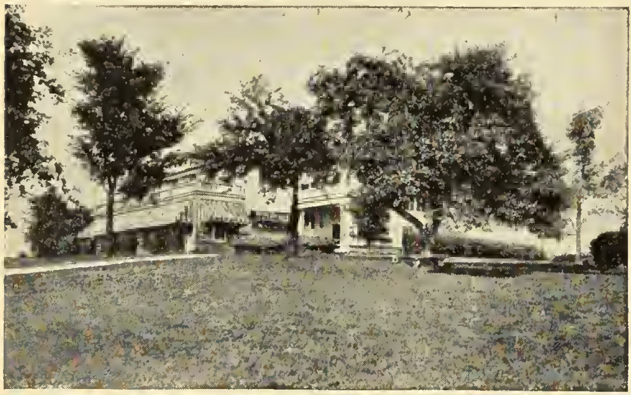
Dr. Weir has moved to Monroe, Wisconsin, and has become affiliated with a medical clinic there.

* * *

Dr. Albert V. Stoesser, clinical professor of pediatrics at the University of Minnesota, and head of the allergy clinics at Minneapolis General and University Hospitals, was a guest instructor at a four-day symposium on allergy held at the University of Kansas School of Medicine, May 5 to 8. Dr. Stoesser spoke on "Hay Fever—Diagnosis and Management" and "Dermatologic Allergy in Children."

* * *

Tribute was paid on March 20 to Dr. Charles W. Mayo by the Rochester Elks Lodge, which selected him at its annual honor night program as an outstanding citizen of Rochester. Toastmaster at the program was Allen J. Furlow, who said of Dr. Mayo: "He has the heritage of a great name, but unless he had what it takes, we wouldn't be honoring him tonight." Mr. Furlow pointed out that the honor "is presented for



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outstanding work in the community, the state and, in this case, the nation." He then presented Dr. Mayo with the lodge's token of the honor—a gold clock.

* * *

Dr. J. S. Lundy and Dr. E. B. Tuohy, Rochester anesthesiologists, journeyed to Los Angeles in the middle of April to attend a meeting of the American Board of Anesthesiology, at which Dr. Lundy assisted with the board's oral examinations. While in Los Angeles, they attended a joint meeting of the American Society of Anesthesiologists, of which Dr. Tuohy is president, and the Anesthesia Section of the Los Angeles County Medical Society.

* * *

Dr. W. R. Lovelace II, a former Mayo Clinic staff member, who left Rochester recently to join the staff of the Lovelace Clinic in Albuquerque, New Mexico, has been named physician-in-charge of passenger comforts in high flying by the Trans World Airline. Dr. Lovelace was a colonel in World War II, during which he received international acclaim for his daring parachute jumps from high altitudes—part of a research program in high altitude flying.

* * *

Dr. Miriam M. Pennoyer, St. Louis, Missouri, who was engaged in postgraduate work in pediatrics at the University of Minnesota Hospitals from 1939 to 1944, has been awarded a research fellowship in medicine by the American College of Physicians, and will investigate adrenal function in the newborn at the St. Louis Children's Hospital, under the direction of Dr. A. F. Hartmann of the Washington University School of Medicine.

* * *

Recently Dr. H. S. Diehl, dean of the University of Minnesota Medical School, stated that for some time 30 to 40 per cent of students admitted to the Medical School had had positive Mantoux reactions, and that two-thirds of those who reacted negatively on admission showed positive reactions before graduation. This incidence has now been reduced to 10 per cent. In the last five years only one medical student has developed clinical tuberculosis.

* * *

The association of Dr. Robert H. Conley with Dr. Roger G. Hassett, Mankato, was announced on March 17. Dr. Conley, a graduate of the University of Minnesota Medical School, served his internship at General Hospital in Rochester, New York. During the war he was in the naval medical corps for thirty-eight months, thirty months of which were spent with amphibious forces in the Pacific theater. Following his discharge, Dr. Conley completed a year of postgraduate work in medicine a the University of Minnesota.

* * *

Retirement in March of Dr. A. J. Wentworth, radiologist of the Mankato Clinic, ended a medical career which began in Mankato in 1914. A graduate of the University of Minnesota Medical School, Dr. Wentworth conducted a private practice in Mankato for two years before joining the x-ray department of the Mankato Clinic. In the first World War he served

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One-week course in Vaginal Approach to Pelvic Surgery starting May 5, June 2, September 15, October 13.
OBSTETRICS—Two-week intensive course starting June 2, September 8, and October 6.
MEDICINE—Two-week intensive course starting June 2, October 6.
Two-week course, Gastroenterology starting June 16, October 20.
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for two years as a radiologist in this country and overseas.

Dr. Wentworth has been replaced by Dr. W. E. Macklin, Jr., formerly of Litchfield.

* * *

Dr. Benjamin Spock, a pediatric psychiatrist, former member of the Cornell University Medical School, and consultant in child psychiatry in the New York City Health Department, has become a consultant in psychiatry at the Mayo Clinic and an associate of Dr. C. Anderson Aldrich in the Rochester Child Health Project.

Dr. Spock, a graduate of Columbia University, is the author of *The Common Sense Book of Baby and Child Care,* which was published in 1946 and has since been reprinted as *The Pocket Book of Baby and Child Care.*

* * *

Resigning from his positions as professor of surgery at the University of Minnesota and head of the surgical service at the Minneapolis Veterans Hospital, Dr. John R. Paine has accepted the posts of professor of surgery at the University of Buffalo Medical School and chief of the Department of Surgery at Buffalo General Hospital. He will assume his duties there on June 1.

A graduate of the medical school at Harvard University, Dr. Paine also holds the degrees of M.S. and Ph.D. in surgery, both from the University of Minnesota. Dr. Paine has been on the faculty of the University of Minnesota Medical School for ten years. From 1942 to 1945 he served with an army hospital unit in England, North Africa and Italy.

An opening for a young surgeon who has had a year or two in the army, or a year or more of surgical training as a hospital resident, is available, as an assistant project surgeon on a large government construction job at Okinawa. The salary authorized by the War Department is base pay of $6,500 per annum with a possible maximum salary of $7,980 per year. The contract is for one year, and all travel expenses are paid. The project is expected to last from one and one-half to eight years. Living quarters are furnished, and "mess" is obtainable at $1.50 per day. Further information may be obtained by communicating with C. J. Iverson, Aetna Casualty and Surety Company, 1550 Northwestern Bank Building, Minneapolis.

* * *

On March 5, 1947, a bill setting aside $130,500 annually, for providing state aid to counties that wish to employ public health nurses, was passed unanimously by the state legislature. In 1922 the legislature passed legislation enabling counties to employ public health nurses. Forty-nine of Minnesota's eighty-seven counties have voted funds to employ such nurses. At present there are fifty-two public health nurses employed in counties and eighty-six employed by school boards. Although there is a shortage of qualified public health nurses at present, it is hoped that many of the 300 students now securing special training in public health at the University of Minnesota School of Public Health will seek these county positions.

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Two Minneapolis physicians have literally made an art of a hobby.

Working at their hobbies during well-earned spare moments, Dr. Carl G. Swendseen and Dr. Robert Wilder have won recognition at painting and sculpturing, respectively. Both have been awarded top prizes in past art contests, and both will exhibit their work again this June in the annual meeting of the American Medical Association in Atlantic City. The exhibit at the AMA convention will be sponsored jointly by Mead Johnson and Company and the American Physicians' Art Association, of which both Dr. Swendseen and Dr. Wilder are members.

Dr. Swendseen began his hobby of painting only four years ago, while Dr. Wilder made his initial attempt at sculpture ten years ago when he first started wood carving. Dr. Swendseen now has a collection of more than fifty of his own oil paintings, and Dr. Wilder has progressed to advanced clay modeling and stone sculpture.

* * *

HOSPITAL NEWS

At St. Mary's Hospital in Duluth a three-man committee is planning a homecoming reunion for former interns at the hospital, many of whom are expected to attend the annual meeting of the Minnesota State Medical Association in Duluth in July. Members of the committee making arrangements for the reunion are Dr. W. J. Ryan, Dr. R. P. Buckley and Dr. K. R. Fawcett.

* * *

Announcement has been made by the hospital board at Blue Earth that donations of several pieces of equipment have been made for use in the local hospital. Included in the equipment are an electric blanket, a supply table and an instrument sterilizer. Further contributions, the board stated, would be gratefully welcomed.

* * *

Dr. Jorge Lazarte, Rochester, has been appointed assistant superintendent of the Rochester State Hospital.

Dr. Lazarte, who came to Rochester in 1941 from Lima, Peru, has an M.A. degree in neurology from the University of Minnesota, and has served five years on a fellowship in the Mayo Foundation, majoring in neurology and psychiatry. He joined the staff of the state hospital in July, 1946. In addition to his local duties, Dr. Lazarte represents the Peruvian government on the United Nations committee for drug control.

* * *

Following the grant of a hospital permit to Greenbush by the Federal government, officers and committee chairmen of the Greenbush Hospital Association have been announced. Officers are William Anderson, president; W. O. Gordon, vice president, and I. S. Folland, secretary-treasurer.

Committee chairmen are Herbert Reese, building; W. O. Gordon, medical; R. W. Huggett, health insurance, and William Paulson, executive.

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A delegation of Brainerd representatives in March appealed to the Civilian Production Authority in Minneapolis to reconsider a request for vital materials for St. Joseph's Hospital in Brainerd.

The delegation was formed after the Authority had rejected a request for materials with which to build a $50,000 service building and heating plant on the hospital grounds. Engineers had previously informed the hospital authorities that unless a new heating plant is installed, the institution might be required to close next winter.

Included in the delegation were Dr. John Thabes, Sr., chief of the hospital medical staff; Lester Hage, chairman of the Brainerd Civic Association, and Norris Ryder, secretary-manager of the association.

* * *

The initial step toward the construction of a hospital at Isle was taken on March 10 when a citizens' committee of Isle met with Dr. Viktor O. Wilson and Ether McClure of the Hospital Licensing Division of the State Department of Health, to discuss possibilities for a hospital in that area. At the meeting Dr. Wilson suggested that a committee be organized to investigate the various aspects of the problem and to obtain the necessary preliminary information for hospital planning.

* * *

Increased efforts to reach an understanding between the hospital boards of St. Luke's and Mercy Hospitals, Thief River Falls, were made by members of the Civic and Commerce Association at their March 6 meeting after the reading of an architect's report dealing with methods for expanding hospital facilities in Thief River Falls. Although the detailed report was not made public, it did recommend that an addition to St. Luke's Hospital would be the least costly means of providing extra facilities.

Association members pointed out the need for a prompt settlement of differences between the two hospital boards if the city were to become eligible for Federa financial aid. It was suggested that the services of a hospital consultant be secured to survey the local situation, with the understanding that the two boards be guided by his recommendations.

Among the speakers at the meeting were Dr. M. D. Starekow and Dr. Theodor Bratrud.

* * *

A community auction, with items contributed by Zumbrota townspeople and farmers in the area, was staged on May 1 as part of a drive to raise funds for the construction of a municipal hospital at Zumbrota. Objects placed on the hospital auction block ranged from tractors and refrigerators to farm produce and household goods.

Proceeds from a noon lunch and an evening dance were added to the auction receipts and to funds obtained by individual solicitation, in an effort to reach the $35,000 total anticipated before the event by the local planning board.

* * *

A report of the interim committee appointed by the 1945 legislature to study needs of the mental hospitals of the state, submitted to the legislature in March, emphasized the over-crowding in all seven of the state mental hospitals.

The report indicated that at least 2,000 additional beds are needed to meet present needs, and proposed a building program that would provide $16,854,000 in improvements over a period of ten years. At the St. Peter State Hospital, for example, rebuilding of administrative offices, kitchen, bakery, steward's offices, warehouses and wards, would cost about $2,910,000, while erection of two buildings, each to house 150 senile patients, would require an additional $800,000.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Obstetrical Practice. Fourth Edition. Alfred C. Beck, M.D. Professor of Obstetrics and Gynecology, Long Island College of Medicine; Obstetrician and Gynecologist-in-Chief, Long Island College Hospital, Brooklyn. 966 pages. Illus. Price, $7.00, cloth. Baltimore: Williams & Wilkins Co., 1947.

Rh—Its Relation to Congenital Hemolytic Disease and to Intragroup Transfusion Reactions. Edith L. Potter, M.D., Ph.D., Assistant Professor of Pathology, Department of Obstetrics and Gynecology, the University of Chicago and the Chicago Lying-in Hospital. 455 pages. Illus. Price, $5.50, cloth. Chicago: Year Book Publishers, 1947.

Nutritional and Vitamin Therapy in General Practice. Third Edition. Edgar S. Gordon, M.D., Ph.D. Associate Professor of Medicine, University of Wisconsin. 410 pages. Price, $5.00, cloth. Chicago: Year Book Publishers, Inc., 1947.

Physician's Handbook. Fourth Edition. John Warkentin, Ph.D., M.D., and Jack D. Lange, M.S., M.D. 272 pages. Illus. Price, $1.50, paper cover. Chicago: University Medical Publishers, 1946

RADIOLOGY FOR MEDICAL STUDENTS. F. J. Hodges, I. Lampe, and J. F. Holt. 424 pages. Illus. $6.75. Chicago: Year Book Publishers, 1947.

The authors, who are members of the Department of Roentgenology of the University of Michigan, have produced a more complete work than the title implies and have understated themselves in speaking of it as a "limited treatise." This book is in two parts; one concerns diagnostic roentgenology and the other x-ray and radium therapy. Either part could stand on its own merits. In the section on therapy, emphasis is placed on the clinical indications and probable results. Every doctor should be familiar with these aspects of therapeutic radiology and information on the subject of the type presented concisely in this work is not generally available. Of interest is the fact that, excluding dermatologic conditions, 40 per cent of the x-ray therapy patients at the University of Michigan have benign conditions.

The first portion of the book takes the reader through a brief history of medical roentgenology with a discussion of the generalities of equipment and the methods of roentgenology, and defines the position of roentgenology as a specialty, and the radiologist. The diagnostic section represents the major portion of the book and is excellently prepared and presented with regard to the clinical aspect of x-ray diagnosis. Controversial subjects are covered dogmatically enough for the beginner but are free from prejudiced conclusions to serve the more advanced reader. The limitations of x-ray diagnosis are mentioned. A bibliography is appended to each chapter.

The publishers have again done an outstanding job in the reproduction of actual radiographs used in the illustrations. This book should find wide acceptance.

L. A. Nash, M.D.

EVERYDAY PSYCHIATRY. John D. Campbell, M.D., Commander, MC, U.S.N.R., Chief Neuropsychiatrist, U. S. Naval Base Hospital No. 8. Formerly Chief Neuropsychiatrist, U. S. Naval Hospital, Charleston, S. C., and Visiting Lecturer in Psychiatry, Medical College of South Carolina, Diplomate American Board of Neurology and Psychiatry. 333 pages. Price $6.00, cloth. Philadelphia: J. B. Lippincott Co., 1945.

The author states that this book "seeks to fill a gap between medicine and psychiatry." He opens Chapter I with the following paragraph: "In an endeavor to present psychiatry to practicing physicians, medical students, and social workers in a usable practical manner, I have concluded that the most expedient approach is

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through the abnormal personality types. These milder mental aberrations constitute 90 per cent of the private practice of psychiatry, a large percentage of military psychiatry, and approximately 30 per cent of all patients who consult physicians in general. Ten per cent of the selectees rejected for military service are rejected because of these borderline mental conditions." This statement indicates the type of and prevalence of the abnormalities discussed in the book.

Mental deficiency, psychopathic personality, psychoneurosis, homosexual personality, schizoid personality, and cycloid personality are each discussed under the following headings: intelligence, conscience and work record, emotional stability, socialability, psychosexual development, and special modes of adjustment. In addition, the etiology and treatment of each of these entities are considered. Chapters on chronic alcoholism, personality examination, and rehabilitation, are included.

Early in the book the reader gains the impression that the four basic personality traits which he describes, intelligence, conscience, emotional reaction, and psychosexual development, as well as two secondary factors, sociability and special modes of adjustment, "are inherited, constitutional and immutable, and are not subject to change by environment, education or training." This attitude may well discourage the reader from perusing it further. Actually, as indicated above, considerable material is devoted to treatment and rehabilitation. It would appear that the more optimistic attitude developed as the material is presented is the correct one.

Although the section on mental deficiency and the attitude that the autonomic nervous system and the endocrine glands are not modifiable by environmental factors will meet with adverse criticism from many readers, the references to the literature and the content of the work as a whole are deserving of commendation.

This book is easily read and is worthy of the careful consideration of those to whom it is addressed.

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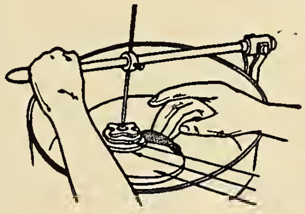

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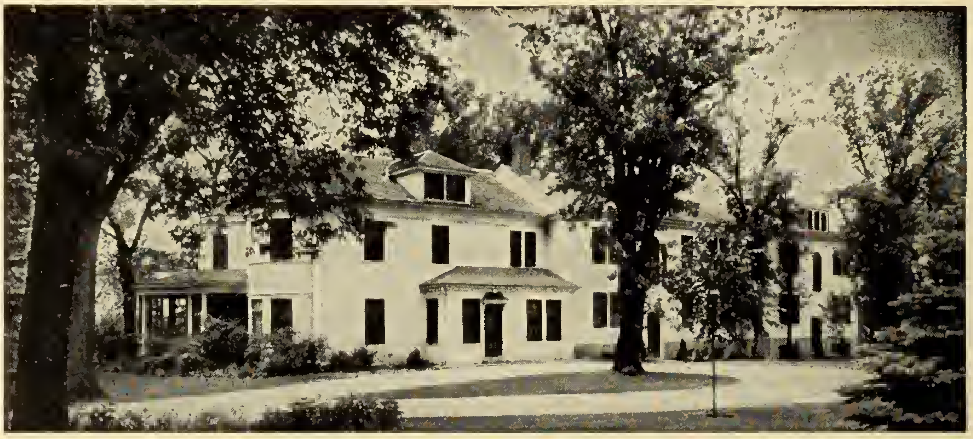

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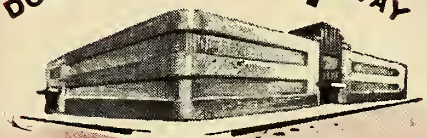

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Notice: This Special Policy available only through Professional Group Department Representatives. Authorized registrars will carry a letter of identification signed by State Manager, Professional Group Dept.

Special Notice to Members

This Disability UPG20 Program shown on the opposite page, extended to the Minnesota State Professional Groups is a program that provides protection which gives Lifetime Benefits and is not subject to cancellation on account of age leaving you without protection when your loss of time is most valuable. It pays benefits for one day or more and covers permanent total disability. This UPG20 Program pays for every injury or accident, even Commercial Air Line travel is fully covered. It covers all sickness and every disease except insanity and venereal diseases. The maximum benefits are $600.00 monthly and its minimum benefits are $200.00 monthly for any illness. Accident benefits pay double indemnity for travel accidents on a common carrier, excepting air travel, which pays only the regular indemnity benefits.

To broaden the benefits while this UPG20 Program is in operation, the following limitations, common to most policies, have been omitted and are not a part of these policies.

(1) The Company's right to cancel the policy at any time—(Standard Provision No. 16).

(2) The Company's right to terminate the policy at a certain age—(Standard Provision No. 20).

(3) The Company's right to refuse renewal of policy to any individual practicing member of your group is forfeited except for non-payment of premium on or before due date.

(4) The Company's power to impose a Rider, eliminating the benefit for something that may happen or develop to render you an undesirable, or un-insurable risk, is canceled thru the elimination of each of the above.

The Minnesota enrollment is proceeding most satisfactorily, but it is the desire of the Companies, not only to conduct the enrollment in the manner found to be most successful for completing the group, but with full consideration for the policy and practice of the Minnesota Professional Associations mentioned.

Most Professional Groups, Associations, or Societies find it inexpedient to make specific endorsement of any company or plan to its members. It is the practice of the Mutual Benefit Health and Accident Association and the United Benefit Life Insurance Company both of Omaha, to submit their Disability Plan to the individual members of the group for their personal consideration. This has proven to be the most successful way to complete the enrollment of members of these groups since it brings about a decidedly better understanding of the plan to the members and, thereby, increases the ultimate total enrollment.

Therefore, should any Authorized Registrar, or Mutual Benefit Salesman represent that he is from either of the designated Associations, or that this plan has been endorsed by either Association, will you kindly report same together with the name of the representative to State Manager, Professional Group Department, 420 Plymouth Bldg., Minneapolis, Minn. —Phone AT. 2579.

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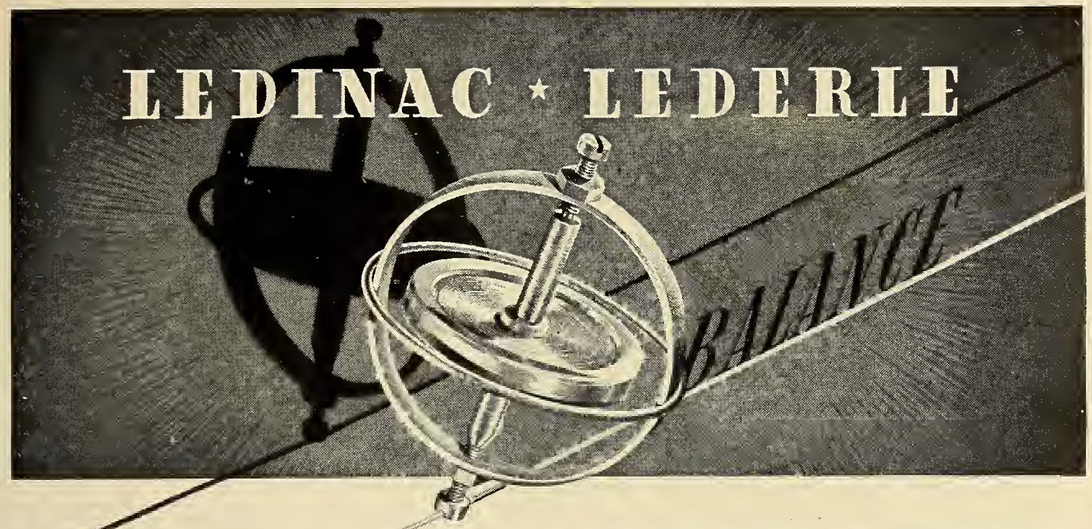

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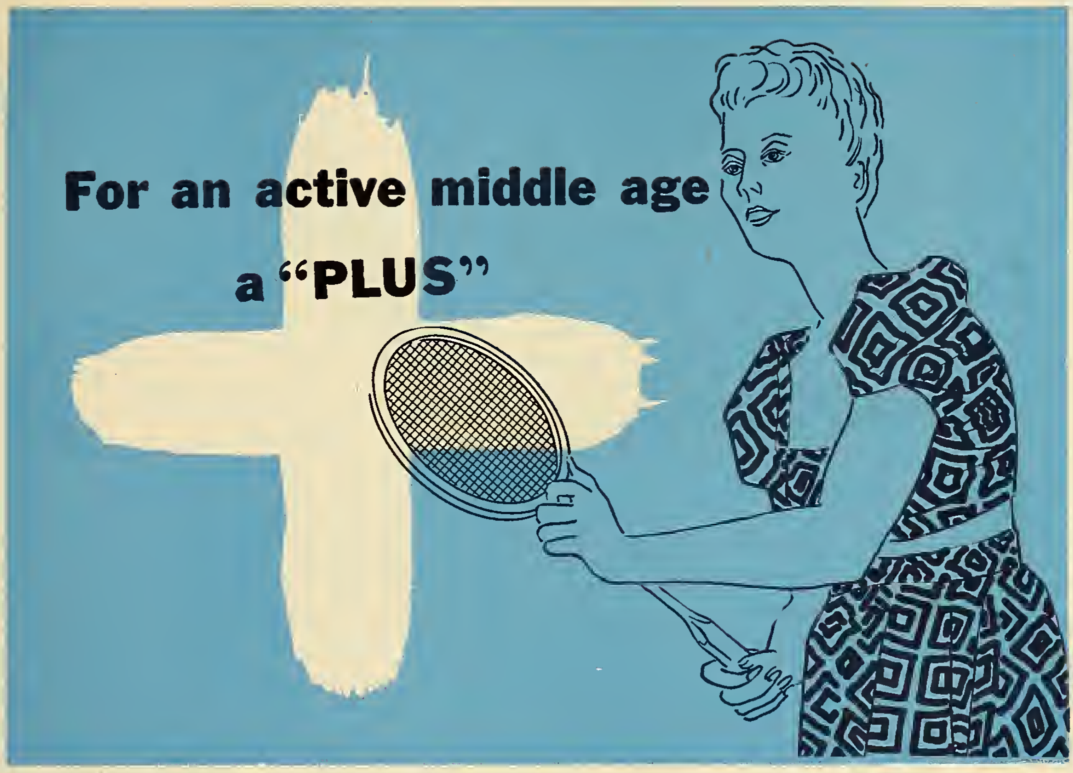
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1. Surg., Gynec. and Obst **74**:390 (Feb 16) 1942.

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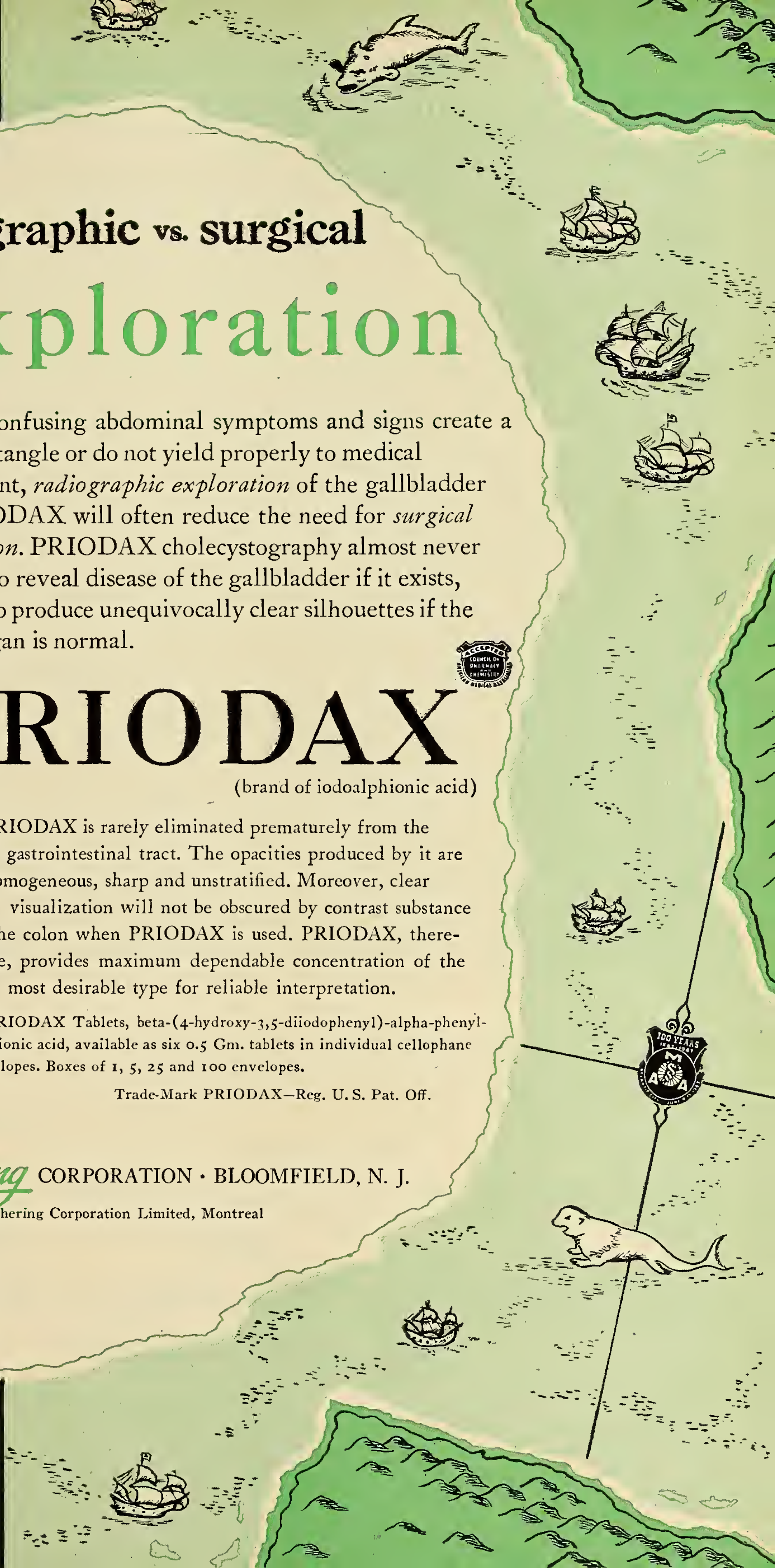

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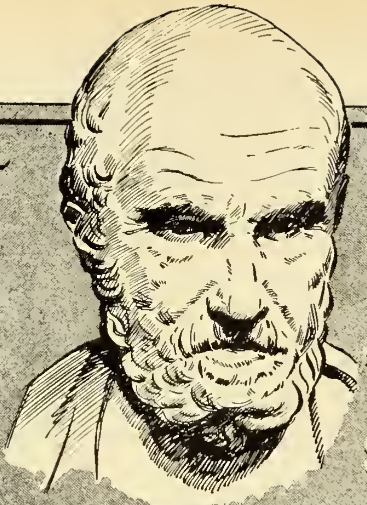

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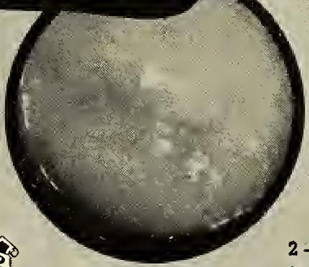

2—One hour postcoitus. Barrier action maintained by film of jelly.

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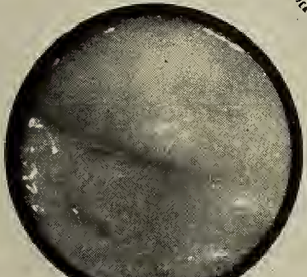
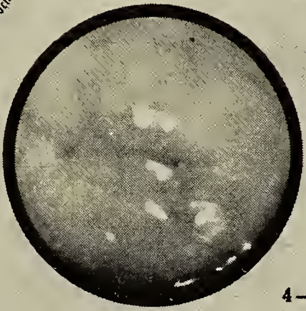


3—Four hours postcoitus. Uterine os remains occluded.



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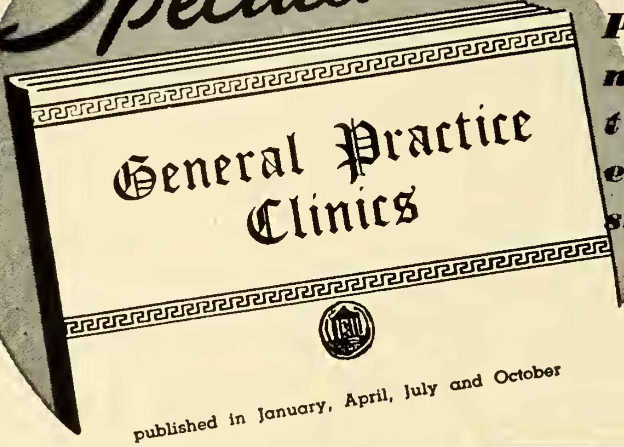

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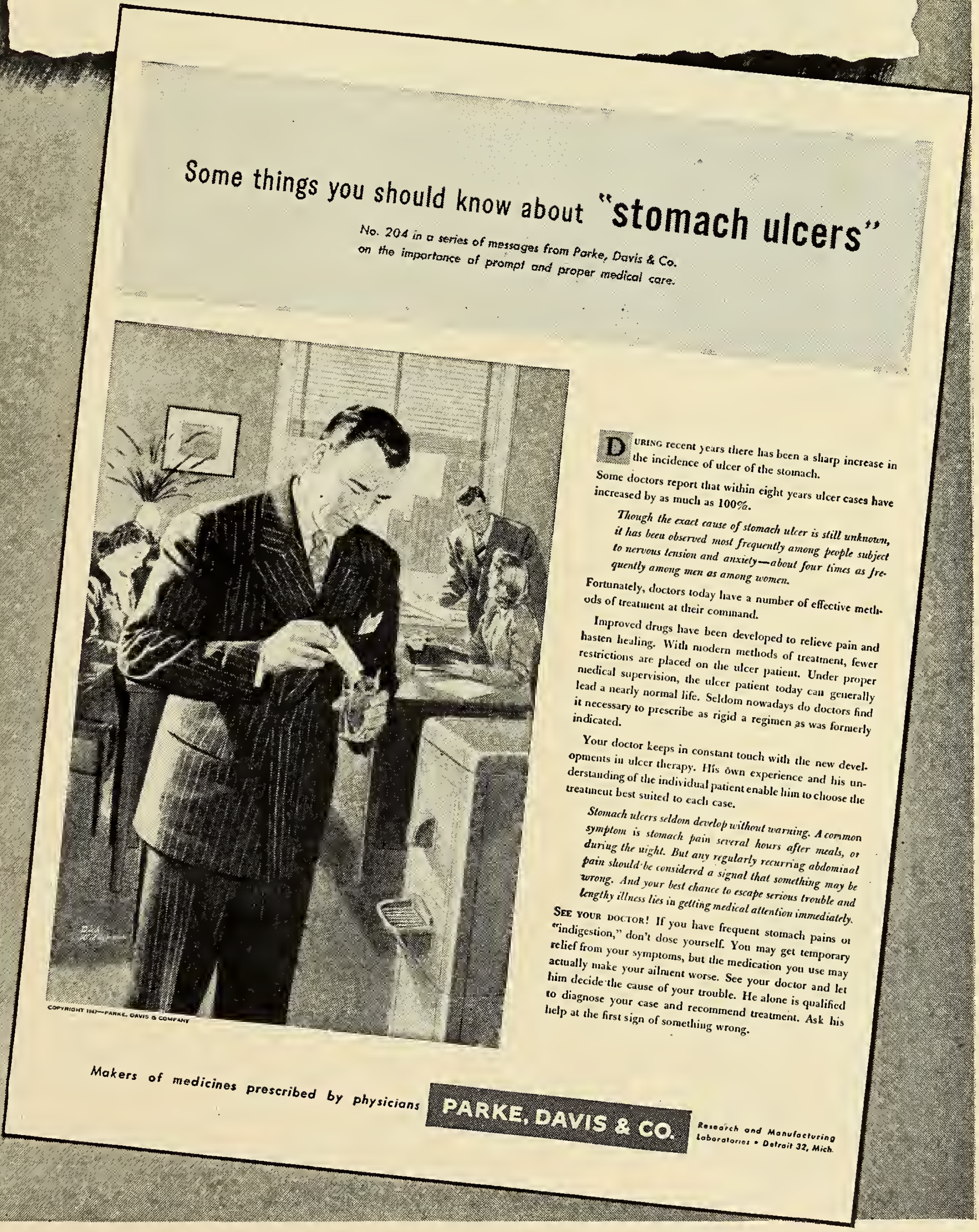

Some things you should know about "stomach ulcers"

No. 204 in a series of messages from Parke, Davis & Co. on the importance of prompt and proper medical care.

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DURING recent years there has been a sharp increase in the incidence of ulcer of the stomach.

Some doctors report that within eight years ulcer cases have increased by as much as 100%.

Though the exact cause of stomach ulcer is still unknown, it has been observed most frequently among people subject to nervous tension and anxiety—about four times as frequently among men as among women.

Fortunately, doctors today have a number of effective methods of treatment at their command.

Improved drugs have been developed to relieve pain and hasten healing. With modern methods of treatment, fewer restrictions are placed on the ulcer patient. Under proper medical supervision, the ulcer patient today can generally lead a nearly normal life. Seldom nowadays do doctors find it necessary to prescribe as rigid a regimen as was formerly indicated.

Your doctor keeps in constant touch with the new developments in ulcer therapy. His own experience and his understanding of the individual patient enable him to choose the treatment best suited to each case.

Stomach ulcers seldom develop without warning. A common symptom is stomach pain several hours after meals, or during the night. But any regularly recurring abdominal pain should be considered a signal that something may be wrong. And your best chance to escape serious trouble and lengthy illness lies in getting medical attention immediately.

SEE YOUR DOCTOR! If you have frequent stomach pains or "indigestion," don't dose yourself. You may get temporary relief from your symptoms, but the medication you use may actually make your ailment worse. See your doctor and let him decide the cause of your trouble. He alone is qualified to diagnose your case and recommend treatment. Ask his help at the first sign of something wrong.

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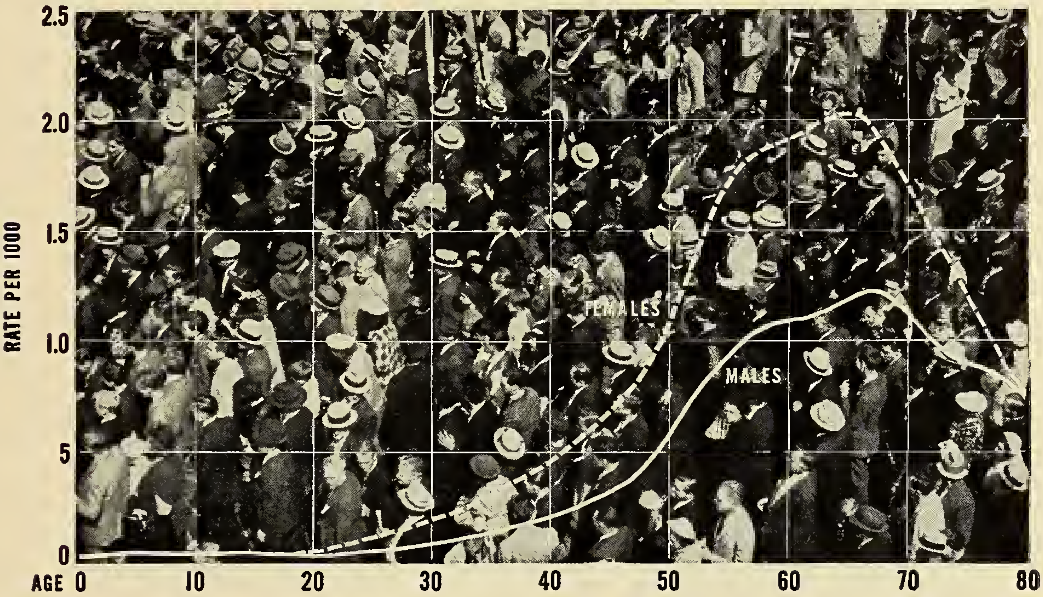
IRON	12.0 mg.	COPPER	0.50 mg.

*Based on average reported values for milk.

WITHIN THE YEAR: 50,000 *new diabetics*

CHANCES PER THOUSAND OF BECOMING DIABETIC WITHIN THE YEAR OF AGE. Adapted from Statistical Bull.[2]



Of our present population, about 4,000,000 will become diabetic sometime in their lives. More than 4% of females and 2% of males under 50 will acquire the disease. With an increase of 50,000 a year, their number will grow in the next few decades at a rate greater than that of the total population. When our population reaches its expected maximum in 1985, it will be 22% larger than in 1940—but by then the diabetic population may increase by 74%![1,2]

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1. Spiegelman, M., and Marks, H. H.: Am. J. Pub. Health 36:26 (Jan.) 1946. 2. Statistical Bull., Met. Life Ins. Co. 27:6 (Feb.) 1946.

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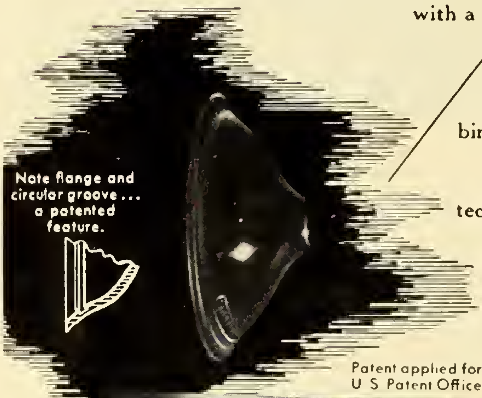

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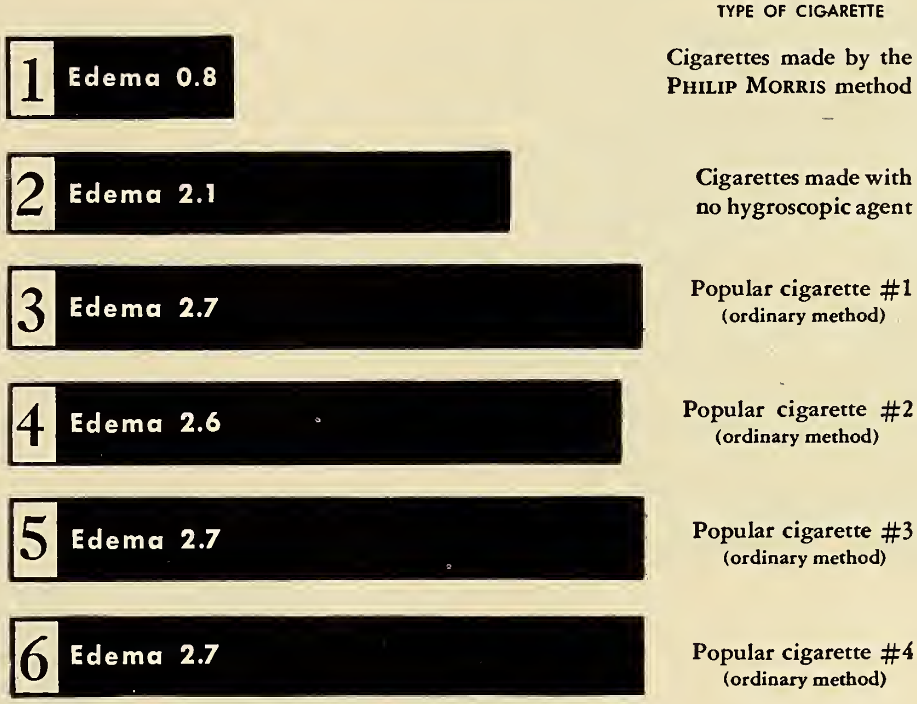

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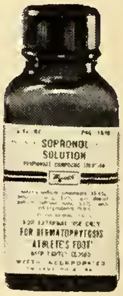
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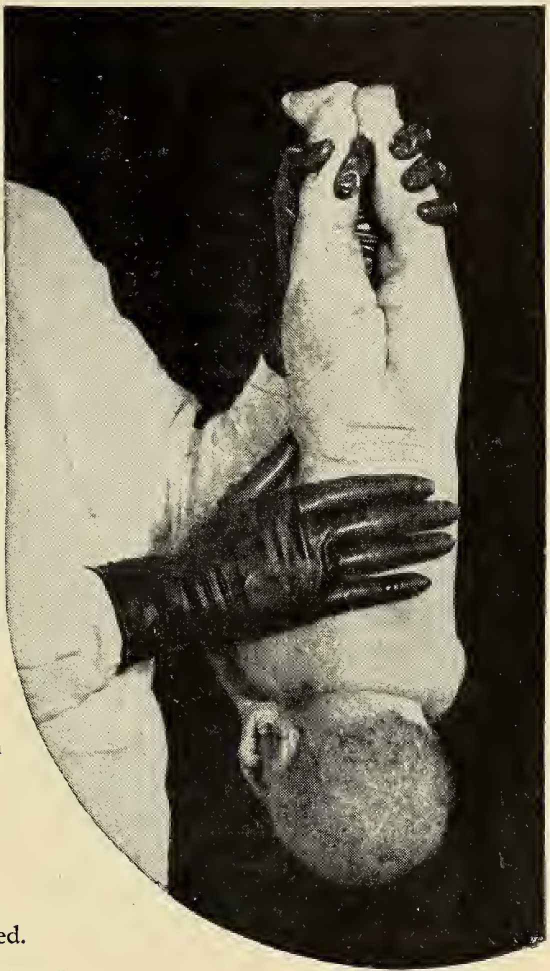

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1. Irvin Abell, M.D., Chairman, Bd. of Regents, Am. Col. of Surgeons; Am. Jl. of Nursing, March 1947,
2. A. E. Hedback, M.D., Editor, Modern Medicine; Jl.-Lancet, April 1947.

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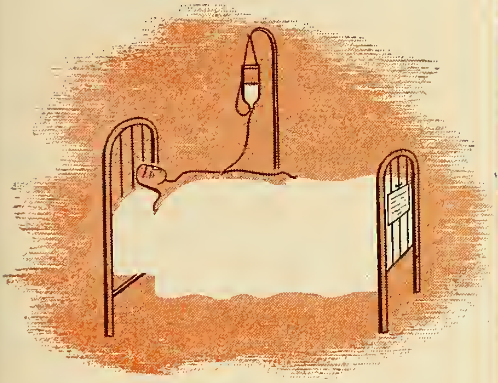
Editorial: Surg., Gynec. & Obst. 83:259, 1946



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Koop: Geriatrics 1:269, 1946

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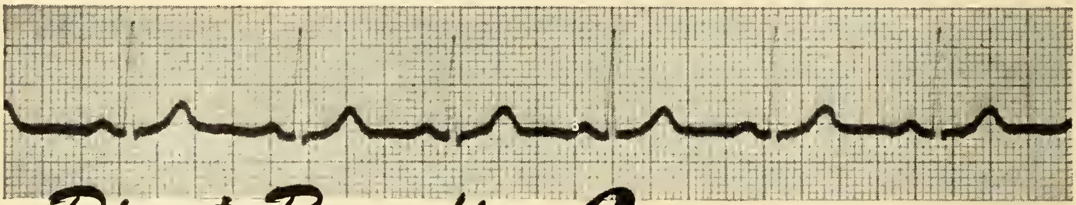

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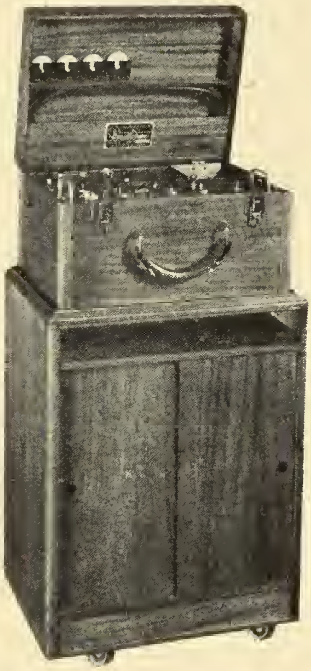

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 **June, 1947** **No. 6**

COMMUNITY-WIDE CHEST X-RAY SURVEYS AND THE GENERAL PRACTITIONER

By HERMAN E. HILLEBOE, M.D.,
Assistant Surgeon General, Associate Chief, Bureau of State Services,
United States Public Health Service
Washington, D. C.

IF tuberculosis is to be effectively controlled in the United States and finally rendered powerless to destroy thousands of American lives, the practicing physician must increasingly lend his knowledge and skills to the concentrated action of organized agencies that now are engaged in a total assault on this community and family disease. The health department, even when its performance is activated by a systematized plan for tuberculosis control, cannot succeed alone. The vigilance, the insight, the proximity to the people, which uniquely the private physician possesses, must be drawn upon for the invigoration and enhancement of current resources.

Any carefully planned program of control recognizes and uses the important talents and the strategic community position of the general practitioner. Indeed, it must be said that the physician in private practice is the principal force in the control of tuberculosis; and, certainly, in case finding, as exemplified by city-wide x-ray surveys, there can be no question of the individual practitioner's significant contribution. Such surveys bring into prominence the true role of each participating group—the health department, the tuberculosis association, and the local medical society. The members of this last group largely determine the success or failure of any survey anywhere in the country. Leadership in such a community enterprise must come from them. The driving force behind all action to find and treat and cure tuberculous persons must arise from a unanimity of professional purpose and must be implemented by the experience and brains of the local medical society members.

In a few communities, there has been expressed occasionally a certain apprehension concerning the effect of community-wide mass radiography projects on private practice. Experience, however, has demonstrated that newly discovered tuberculous patients and their families go to their family physicians for supervision, advice, and care. Mass x-ray surveys disclose a surprising number of early cases that, though asymptomatic, require long-term follow-up and guidance.

Increased knowledge of the epidemiology of tuberculosis impels us to direct our attention not only to the individual tuberculous person, but to the community as a whole. Unless surveys are done, relatively few tuberculous persons in any community are discovered before symptoms develop, and fewer still come under the care of physicians experienced in diseases of the chest. One cannot tell how many other infectious persons are never seen by physicians. During lifetimes they are spreaders of disease. It must be emphasized that the community, in which hidden cases of tuberculosis are positive disease entities, is of greater moment than is the person who spontaneously comes under care. There can be no control worthy of our respect if, in any given city, over half of the cases, especially early ones, are hidden from our view.

Not only must such a program to find hidden infectious cases be extensive, but it also must be intensive in action and limited in time. Indeed,

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Thirteenth Annual John W. Bell Tuberculosis Lecture sponsored by the Hennepin County Tuberculosis Association and delivered before the Hennepin County Medical Society, April 28, 1947.

one of the most interesting aspects of mass radiography programs is the time element.

It has been emphasized in recent years that the most effective method of controlling tuberculosis is by means of chest x-ray examinations of the adult population in a definite period of time. In an attempt to achieve this objective, the U. S. Public Health Service is assisting state and local health departments with equipment, personnel, and consultation. Indeed, through demonstration of the effectiveness of community-wide mass x-ray surveys, the people of the nation now realize more fully the seriousness of the tuberculosis problem in their communities and are initiating action to stamp out the disease.

The action prompted by this new technique has often been interrupted by confusion of public health principles, a condition occasioned by varying approaches to tuberculosis control.

One group believes that the single technique of examining contacts of known tuberculous persons will discover all the new cases in the community. Another group advocates an annual tuberculin test of every person as the sole means of discovering all people with tuberculosis. A third group, mostly epidemiologists, emphasizes the damage done by people with hidden tuberculosis and by their many unknown contacts, and urges a total assault on the disease by means of (1) community-wide x-ray surveys done within a deliberately limited period of time; (2) the concurrent establishment of adequate follow-up facilities and the examination of contacts of previously known and newly discovered tuberculous persons, and (3) tuberculin testing of samples of the population at stated intervals.

Family studies and careful follow-up work in some of the best health departments in the country have shown that examination of contacts discovers as little as 25 per cent of new cases reported each year. In other words, only one out of four new cases may be found by examining contacts of previously known patients. Three out of four are new cases from the apparently healthy population, about whom there has been no previous record. Moreover, the principle of examining the adult population in a limited time, which is so important in the control of tuberculosis, cannot be effectively applied in a program which examines the contacts of known tuberculous persons only. Too large a portion of the population is not reached at all. Unless contact examination is reinforced by other case-finding services, intense and continuous exposure of the public to hidden cases will occur. In addition, this method, if used alone, is prodigal of time, personnel, and money, and can at best be only partially effective.

Annual tuberculin testing of the entire population of the United States, accompanied by x-ray examination of reactors, has been shown to be impracticable. Particularly in large cities the major portion of the adults are reactors to tuberculin, and little is gained by tuberculin testing before x-ray examination. Tuberculin testing of sample groups of the community at intervals is useful in determining changes in the infection rate from year to year. After the spreaders of the disease have been identified, treated, and isolated, and contacts supervised, it might be desirable to test those whole communities where the infection rate is low. The tuberculin test, moreover, is a most efficient tool in the differential diagnosis of tuberculosis after the screening x-ray examination.

With full use of resources heretofore unrealized and with a resolute determination to wipe out tuberculosis as a social and individual problem, the large and small communities of the entire United States could be covered by mass radiography teams in less than five years' time.

These modern methods, combined with efficient clinical and laboratory procedures for exact diagnosis, will give communities a precise knowledge of the local tuberculosis problem and will form the basis for realistic plans to remove the danger of tuberculous infection and disease. Adequately aided by money, trained personnel, and medical facilities, every aroused community can bring about the defeat of tuberculosis among its citizens.

Tuberculosis presents at once a challenge and an opportunity to the general practitioner. Thousands of persons who have tuberculosis go to private physicians for other illnesses, and no official agency ever sees them. Although the physician deals directly with the source material of tuberculosis, he often does not recognize the early stages of the disease because he does not constantly search for tuberculosis with the tools at his command.

Too often it is assumed that the control of tuberculosis is solely the health department's domain of action. This is not true, nor can it ever be true, so long as men practice the ancient art of medicine. The family doctor in the city, the country doctor going about from farm to farm, the village doctor in his office over the drug store know the people, have their trust, and guide their physical destinies. The educational pamphlets of a hundred organizations cannot have the enduring effect nor the permeating persuasiveness of the doctor's personal advice. Tuberculosis is so deeply a personal disease that news of its tragic onset or advance can be more calmly accepted when its source is the family doctor and not a stranger from a distant agency.

Participation by the private physician in the control of tuberculosis need be no trouble in terms of time or technique. There are many ways in which the private physician can contribute his talents as a professional man and his influence as a community leader in any integrated program of control. The use of the intracutaneous tuberculin test of chest x-ray film on every new patient who has not been recently examined for tuberculosis should be a fundamental routine; this is a continuing and essential part of the community-wide plan. Reactors to tuberculin should have chest x-ray films made and interpreted by physicians with training in chest diseases. The general practitioner can get expert help from sanatorium physicians, chest specialists, and radiologists in his area on all routine chest films. Regularity of such conferences with more highly specialized colleagues will provide many opportunities to develop skills in the interpretation of films. Local health departments and tuberculosis associations can make special consultation service available for films of indigent patients.

It has been estimated that nearly 4 per cent of all persons who visit physicians' offices complain of cough or expectoration. The alert physician will insist upon a sputum examination of all such patients. Such practice will be rewarded by the discovery of tubercle bacilli in three or four out of every 100 specimens examined. The family doctor will fairly often discover to his astonishment that a patient with slowly resolving pneumonia has an acid-fast reason for prolonged convalescence.

In less populous areas the general practitioner is required to carry on case finding and follow-up almost singlehanded. He must give advice and encouragement to his tuberculous patients and their families. Indeed, it is at this time that the practical philosophy of the private practitioner is of great moment—at the height of that crisis which often occurs upon the announcement of tuberculosis. It is at this time that the general practitioner can bring all his talents into play. He is aware of the whole person. He knows the patient's background, habits, aspirations, and desires. He does not think of his patient merely as a pair of lungs; he thinks of a man of spirit as well as of body, who for a time has come, through tuberculosis, upon disaster.

Through the utilization of modern methods of case finding, the general physician can extend the frontiers of medicine. Those physicians who have not had actual experience with these new techniques should be provided with training by the county medical society, the medical school, the health department and the tuberculosis association. Postgraduate training and continuation study should be provided, so that practitioners who are removed from centers of medical knowledge may take advantage of the latest information. By means of such training, the case finding of the general practitioner can be integrated with the case finding of official and voluntary agencies. The private physician has a vital part to play in the campaign against tuberculosis; the success of the whole movement may well be determined by the efforts and leadership of general practitioners.

The private physician's interest and enthusiasm will be increased and, as a result, his effectiveness as a worker in the community-wide program of tuberculosis control will grow if he takes the time to learn about some of the latest advances in the field. A few of the more noteworthy developments merit your attention.

Within recent years some significant contributions have been made to our understanding of the tuberculin test and chest x-ray film. These developments should enable us to understand better how and why the tubercle bacillus invades the human body. Studies by Furcolow and coworkers have shown that there are great variations in human sensitivity to tuberculin and its products, depending upon the dosage used and the characteristics of the population groups tested. It was demonstrated that effective contact with the tubercle bacillus appears markedly to increase sensitivity to tuberculin (very small doses give typical reactions); on the other hand, almost all persons tested will be reactors if sufficiently large doses are given. (However, as the size of the dose increases, the proportion of typical reactions increases also, that is, reactions that often appear early and disappear early and are soft and spongy in appearance.) Consequently, proper interpretation of tuberculin tests requires a knowledge of the size of the dose and the type of product used.

It appears that the tuberculin sensitivity of patients suffering from active tuberculosis is at such a high level that the infection in these persons may be detected by the use of an exceedingly small dose of old tuberculin (OT) or of PPD (purified protein derivative). The authors point out that an intermediate dosage of approximately 1/10,000 mg. of the particular PPD used in their studies was sufficient to pick up a high proportion of infected persons. It is significant from the point of view of usefulness of tuberculin testing for determining infection rates and for differential diagnosis that both children and adults with active tuberculosis almost always are reactors to tuberculin, except in the terminal stages of the disease.

Palmer and his co-workers have pointed out that one of the significant problems in tuberculosis involves the marked variations, in different parts of the country, of the frequency of pulmonary calcification observed in x-ray films of the chest, especially among nonreactors to the tuberculin test. This is striking in view of the fact that pulmonary calcification is generally interpreted as evidence of healed tuberculosis. There is incomplete epidemiological evidence that tuberculosis is the only important cause of such findings. Early in 1940 Palmer and his co-workers were puzzled by the high correlation between nonreactors to tuberculin and pulmonary calcification. They began to search for other causes of calcification; coccidioidin reactions were studied in relation to pulmonary calcification and failed to show any correlation on a geographic basis. It was natural to search for other fungi as one of the offending factors.

About this time Christie and his group in Tennessee were concerned with the same problem. Christie had some children under his care who were nonreactors to tuberculin and had pulmonary calcifications. The patients reacted to histoplasmin, the testing material prepared from the fungus *Histoplasma capsulatum*. This relationship suggested to Palmer the desirability of testing a large number of student nurses throughout the country, in order to determine the relationship of histoplasmin sensitivity to tuberculin sensitivity and pulmonary calcification. Preliminary reports from Palmer and his group indicate that (1) a mild, probably subclinical, infection with Histoplasma capsulatum (or immunologically related organisms) is widely prevalent in certain states and relatively infrequent in others, (2) that in general those states in which the frequency of reaction to histoplasmin is high are those in which pulmonary calcification is also high, but reaction to tuberculin is low, and (3) that a high proportion of the pulmonary calcification observed in x-ray films of nonreactors to tuberculin is not due to tuberculosis.

A recent study, based on an analysis of skin tests of siblings found among children who were lifetime residents of the metropolitan area of Kansas City, Missouri, is extremely interesting because it demonstrates that there is a similarity of histoplasmin reactions among children of the same family. The percentage of reactors is higher among children whose older sibling does not react.

The similarity grows less marked as the children grow older: the difference in the percentage of reactors between children with an older sibling who reacts and children with an older sibling who does not, increases with increasing age of the older child.

The closeness in age of siblings influences the degree of similarity, as shown by the fact that the differences in percentage of reactors among siblings of a reactor and of a nonreactor are greater when there is no more than two years' difference in age between the two children.

After the similarity between siblings produced by the known factors affecting the frequency of histoplasmin reactors (geography, age, sex, and race) has been eliminated, there is still present some factor which makes siblings of a reactor more likely to react to histoplasmin than siblings of a nonreactor.

The epidemiological evidence indicates that a very high proportion of the pulmonary calcification observed in individuals living in these states may be due to infection with Histoplasma capsulatum or related organisms and not to tuberculosis. The epidemiological studies are being pursued vigorously by several groups throughout the country. Many of the old concepts of primary and reinfection tuberculosis will have to be reconsidered in the light of these recent findings.

It was in the decade between 1935 and 1945 that students of epidemiology were provided with an important new instrument to assist them in their field investigations—the photofluorograph. Mass radiography made possible the examination of hundreds of thousands of people—in fact, whole communities—in a short period of time and at a reasonable cost. The experience of Davies and his co-workers in St. Louis County, Minnesota, demonstrated that over 90 per cent of the population of communities of fair size could be examined within a surprisingly short period. All open cases, clinical cases, and suspects were detected and later identified. Facilities were available for the isolation of open cases and the medical supervision of the subclinical cases and suspects. If the standards of living of the citizens of the community can be raised to a higher level and kept there, eradication for the first time becomes possible.

Such community studies have not been followed up for a long enough period of time to measure the various risks of different population groups in the community. Within the next few years following the war, it should be possible to answer some of the pressing questions regarding the natural history of the disease in the community. Certainly it has been demonstrated that rather complete community examinations are practicable and can become a precise tool in the study of the epidemiology of the disease as well as an important weapon in the fight against tuberculosis.

Now that the x-ray machine goes to the people, and examines them in large groups, it discovers tuberculosis in its minimal stage in a high proportion of the cases found. The importance of this finding in controlling the disease is made clear by the fact that in recent years only 10 to 15 per cent of admissions to tuberculosis hospitals have been minimal cases. Today, with new mass radiographic techniques, 65 to 70 per cent of all cases found have x-ray evidence of minimal disease. Tuberculosis is at last being found when it can be relatively easily arrested; even infectious cases can be detected earlier and prevented from spreading their disease.

Scientific accomplishments during wartime have clearly revealed the value of planned co-ordinated research in arriving speedily at the solution of trying problems in tuberculosis control. Strangely enough not the least repercussion of atomic fission is the stimulus it has given to group activity in research. Certainly this is true in the study of variations in the interpretations of x-ray films of the chest. Mass radiography brought in its wake some troubling problems in film interpretation. Studies of Morgan and his co-workers have demonstrated that various film techniques, 35 mm., 70 mm., 4 by 5, 14 by 17 paper, and finally 14 by 17 celluloid film, are equally efficient in detecting practically all of the significant pathologic conditions present on x-ray films of the chest. Group work is now going forward to determine the human error in the interpretation of chest x-ray films.

The ingenious technique developed by Yerushalmy for making comparative studies of various types of films read by several interpreters is worthy of further use in other fields of science and public health. It avoids the use of one film and one reader as standards because either of these may have considerable variation. If five readers use four different sized films (one to twenty positives plus all twenty negatives) twenty-one combinations are possible. Yerushalmy uses eleven positives out of twenty readings as a standard.

Prior to the widespread use of photofluorography in chest examinations, radiologists and chest specialists were firmly convinced that x-ray examination was one of the most precise laboratory tools at our disposal. The first comparative studies appeared and astonished all radiologists who formerly had assumed that roentgenological diagnosis was synonymous with high accuracy. The failure of an individual reader to be consistent with other readers presents a problem of considerable magnitude in the simple procedure of determining the presence or absence of a shadow "characteristic" of tuberculosis of the lungs. The variation of one person's separate interpretation of the same films at two different times, is even more astonishing. Discrepancies in the determination of activity and morphology of lesions among several expert interpreters were so great that the toss of a coin would have given about the same results.

Birkelo, Chamberlain and co-workers have demonstrated that the human error is great and that new techniques will have to be developed for the uniform detection of pulmonary lesions and that better classification will have to be devised to describe shadows on x-ray films. The variation in the determination of activity of tuberculous lesions on x-ray films is so great that in the modern clinics throughout the United States this differentiation is not made without careful laboratory, clinical, and serial x-ray examinations. All findings must be interpreted in their entirety by a competent clinician who considers subjective variations as well as objective findings. As these investigations in x-ray diagnosis go forward, still sharper tools will become available for the study of the meaning of various types of pulmonary lesions demonstrated on the x-ray film.

The error is of great moment in the epidemiology of tuberculosis, because the roentgenogram of the chest is the principal tool in diagnosis and follow-up of tuberculous persons. Great care must be exercised in making comparisons of epidemiological studies done by different investigators. Variations in results based solely on interpretations of x-ray films may be more apparent than real. For the present, if results are to be meaningful, comparative studies should include provision for interpretation of all chest films by two or more well-trained interpreters, with careful evaluation of their independent readings. Such self-examination in the complex field of roentgenography of the chest is essential if fundamental research is to contribute the additional knowledge that is so urgently needed.

Another subject which has attracted the attention of scientific investigators in the field of tuberculosis has been vaccination with the bacillus of Calmette and Guerin (BCG). Careful review of the extensive literature on this subject fails to reveal irrefutable epidemiologic evidence of the permanent effectiveness of this vaccine. Studies by competent workers in the Scandinavian countries and reports from the South American investigators demonstrate a relationship between vaccination and decreased incidence of the disease among children and some adults over limited periods of time. In the United States the relative abundance of sanatoria and low mortality rates in certain areas has minimized the need for an immunizing campaign. Furthermore, there has been a strong objection on the part of some of the tuberculosis clinicians in this country to infect children who may have the chance of going through life without ever becoming infected. The full effect of the vaccine on tuberculosis in human beings must wait until carefully controlled studies precisely measure a reduction in morbidity and mortality in various age groups for long periods of time. Where there is inadequacy or complete absence of isolation, lack of personnel and facilities for control, and where persons, particularly children and susceptible racial groups, are subject to massive exposures to tuberculosis, with little likelihood of any change, BCG vaccination should be given immediate consideration. BGG vaccine, and possibly other similar vaccines being developed, would appear to hold more promise for the reduction and control of tuberculosis than streptomycin, even though the results of the latter in individual cases impress the public and the profession as more spectacular. The epidemiologist must still convince the clinician that prevention will contribute far more than treatment in the control of tuberculosis.

The brilliant discovery by Waksman in 1944 of the antibiotic, streptomycin, however, offers hope for suppressing pulmonary tuberculosis in human beings. It appears to have a definite but limited effect upon clinical progress of the disease; this includes retrogressive changes on the x-ray film, but only occasional changes from positive to negative sputum. Although the drug is too new to have permitted careful study of its effect over a long period of time, some interesting implications immediately become apparent. The use of this new antibiotic for advanced cases of tuberculosis is of limited value because of the irreversible pathological processes that have already taken place. In most sanatoria throughout the country, from 70 per cent to 90 per cent of first admissions have advanced disease. It is for this reason that Dr. Hinshaw of the Mayo Clinic estimates that not more than 10 per cent of patients now in sanatoria in this country would be likely to benefit by treatment with streptomycin, and then only if cases were carefully selected by experts in diseases of the chest. Yet for the first time, both children and adults with tuberculous meningitis have recovered. The Veterans Administration has treated over fifty cases with the remarkable record of one recovery out of every five cases. It is true that many of these had serious complications. The follow-up experience of these cases is awaited with interest. This contribution in meningitis is of great importance because of the case-fatality rate of almost 100 per cent before the use of streptomycin.

Among experimental animals it has been demonstrated that the use of streptomycin can cause a tuberculin reactor to become a nonreactor. Similar experiences have not yet been reported in human beings. Excessive cost of the drug has prohibited its wide use up to the present time; furthermore, no adequately controlled studies of patients treated with streptomycin have been presented. Greatly expanded clinical and laboratory research is urgently needed.

Several questions about streptomycin merit consideration. Investigators find that after a four months' period of treatment with recommended doses of streptomycin, the sputum still contains virulent tubercle bacilli in a considerable number of patients with advanced tuberculosis, even though there is some clinical improvement and retrogression of tuberculous lesions on x-ray films. Patients who are still infectious may wish to leave the hospital because they feel better, although their disease is not arrested. In this instance, streptomycin plays the dubiously beneficial role of temporarily helping the individual but permanently harming the community by causing the spread of the disease to uninfected contacts. Furthermore, laboratory studies have shown that persons kept on treatment with streptomycin for even short periods of time, develop strains of tubercle bacilli that become resistant to streptomycin but still retain their virulence. The longer the patients are treated the more likely this is to occur. Epidemiologically, a dangerous situation could be created that would retard rather than hasten the control of this disease. The nonhospitalized infectious patient, whose disease is not arrested completely, would spread a streptomycin-resistant strain of tubercle bacilli capable of causing disease in susceptible contacts, who, upon entering the hospital for care, would not be amenable to streptomycin treatment because their tubercle bacilli would be already resistant to the drug. Careful study will have to be made of these factors before such a drug is used widely throughout the nation. Extensive use of any antibiotic in the treatment of a chronic disease like tuberculosis makes necessary plans for the substitution of new antibiotics when resistant strains become sufficiently prevalent in the affected groups of the population to restrict treatment possibilities. As Dr. Hart of England points out, there is, at present, insufficient evidence concerning the use of chemotherapeutic agents in tuberculosis to warrant any cessation of the successful campaign to provide more beds for the isolation and treatment of persons with infectious and remediable disease. Actually, when a successful therapeutic agent emerges, as it undoubtedly will, additional personnel, beds and other facilities must be available for the most effective use of such an agent.

Laboratory examinations for tubercle bacilli are in somewhat the same untenable position in the United States today that serological tests for syphilis were at the beginning of the venereal disease control program over a decade ago. There is no general agreement of the most effective media for culture of tubercle bacilli in the routine or research laboratory. There is great diversity of opinion on the relative value of culture methods versus guinea pig inoculation in the identification of virulent organisms. Prolonged discussions are a common occurrence at meetings when professional men debate merits of the direct smear, the concentrated specimen, and the examination of gastric lavage in laboratory detection of tubercle bacilli. Recently the technique of pulmonary lavage has been popularly acclaimed, only to complicate the problem further. Yet no subject is of greater significance in the epidemiology of tuberculosis than the detection of virulent tubercle bacilli in persons suspected of or having the disease. Sputum examination is essential for exact diagnosis; prognosis rests largely on its accuracy; infectiousness is determined solely by the presence or absence of infecting organisms in bodily discharges. Much of our present knowledge of epidemiology has come from combined clinical and laboratory investigations. Without the results of laboratory tests, the clinician would find it difficult to diagnose accurately, predict realistically, and treat effectively a high proportion of his patients.

Too many persons have been labeled tuberculous on the basis of a single x-ray examination of the chest; laboratory diagnosis of tuberculosis has been too often neglected. The pathologist insists that he find tubercle bacilli before he can assign tuberculosis as the cause of disease. This is not always possible in office practice or in field investigations. Yet before final diagnosis every effort should be made to take careful histories, to perform tuberculin tests, to make repeated sputum or gastric lavage examinations, to repeat x-ray examinations. It is clear that scientific medicine cannot be practiced without laboratories for the performance of scrupulous examinations for tubercle bacilli.

To determine the effect of sanatorium care or surgery on the natural history of tuberculosis in a given population group, high standards of laboratory diagnosis must be observed; otherwise such studies are likely to become a series of unassociated case histories. Many of the reports of the results of surgical treatment of tuberculosis of the lungs suffer from a paucity of evidence concerning reversion of positive to negative sputum because of lack of laboratory controls.

The easily performed procedure of pneumothorax is often initiated before tubercle bacilli are demonstrated in the pulmonary discharges or the pleural fluid. Epidemiology teaches us that all shadows on the x-ray film are not tuberculosis. All the wisdom and judgment of an experienced chest clinician must be utilized before interfering with the normal physiology of the respiratory system. The possible advantages of surgery must be carefully weighed against the dangers of interference with restoration of normal function by the body itself.

From the x-ray film alone even the experts cannot consistently distinguish the fibroid from the exudative type of pulmonary lesion. Prolonged study in a hospital by experts offers the only solution to this difficult diagnostic problem. Yet the truth is, there are not sufficient beds in the United States to hospitalize all the minimal cases now being discovered in increasing numbers by mass radiography of the adult population. Furthermore, there probably will not be enough beds for some time, in spite of concentrated efforts of powerful and influential agencies and citizens. What is to be done in the meantime? Supervise the minimal cases that cannot be labeled active clinically, and use the hospital beds for those minimal cases of uncertain or active status and for the more advanced infectious cases. The goal of a sound tuberculosis control program is to prevent spread of disease. Therefore we must make the best use of existing beds for known spreaders and known active cases, which will become spreaders. We must care also for all those who have suspicious x-ray lesions to prevent their breaking down. We must mobilize all resources at our command until we get sufficient beds or learn more about the relative benefits of ambulatory and bed treatment of all types of minimal cases.

The problem of proper disposition of a person with a minimal lesion requires further appraisal and research. Long-range studies of random groups of the tuberculous population with minimal disease are urgently needed. In the meantime, caution is required in hospitalizing every asymptomatic person with a minimal lesion, especially if known cases with infectious or remediable disease are awaiting admission to the sanatorium. At the same time, there must be close supervision of ambulatory persons with asymptomatic minimal lesions. Frequent repetition of x-ray and laboratory examination should be the rule. Abnormal pulmonary findings of any kind that appear on serial study, should be carefully scrutinized in the doctor's office or public clinic so that even the slightest signs may be studied for possible evidence of activity.

If such a practice is generally followed, chest physicians will gain in skill of diagnosis; limited hospital resources will be conserved for urgent cases; and epidemiology will assume added significance. Judgments based on positive and complete evidence will give a final verdict that preserves the health and productivity of the individual and at the same time protects the public health.

The unsolved problem of hospitalization of the tuberculous in this country poses many questions. In recent years over one-third of all deaths from pulmonary tuberculosis occurred outside of hospitals and institutions. There are many areas in the country which cannot find the means to provide hospital care for their tuberculous citizens. Recent studies of mortality in nine populous southern states reveal that from 55 to 77 per cent of deaths from tuberculosis occurred outside of institutions and sanatoria. The opportunity for spread of the infection from the family member who died at home to the family associates must have been tremendous, especially where poverty and overcrowding existed in areas of severe economic distress. Control of the disease will be impeded until a more realistic distribution of hospital facilities is accomplished. Tuberculosis does not respect state lines, color, race, or creed. The real value of case finding is measured by the number of infectious cases that are given isolation care and thereby prevented from spreading infection to others.

In any community, there are specific epidemiological data which must be analyzed and evaluated before a sound program of efficient bed utilization can be instituted and maintained. The morbidity and mortality rates are of great importance in determining the extent of the local problem. A knowledge of the quantity and availability of hospital beds, clinics, nursing, medical, social, and other professional services for the care and supervision of the tuberculous is equally important. The number and distribution of physicians trained in chest diseases constitute fundamental factors in the management of ambulatory cases and in economy of bed usage.

Such critical studies provide the answers to certain questions that leaders in tuberculosis control in every community must answer before they can develop and operate an effective hospital program.

1. What is the fundamental purpose of hospitalization of the tuberculous—isolation or treatment? The answer to the first question is unequivocal: the protection of the health of all the individuals in the community takes precedence over the health of any one individual. Of course, in the handling of individual patients, the physician must stress individual needs and the benefits derived from hospitalization by the person concerned.

2. Does the community, with a scarcity of beds, benefit more through the hospitalization of minimal cases with no sysmptoms or of advanced infectious cases? The answer to this question inevitably follows: the positive sputum case must be hospitalized to prevent spread of the disease; the earlier the case is found the better.

3. Should communities develop preventoria for children who are heavily exposed and certain to become infected, but do not yet have clinical disease? Study of family contacts has provided the answer to the third question: hospitalize the infectious adult source and thereby remove the danger of infecting children in the home. It is easier and more economical to hospitalize one parent than three or more children.

There is a known shortage of over 50,000 beds for the tuberculous in the United States in 1947. This condition appreciably affects the quantity and quality of care that can be given. It is not uncommon for a large area to have only 200 beds and a register of more than 400 positive sputum advanced cases and over 1,000 with minimal disease.

How can the limited number of beds be used to greatest advantage? It is suggested that positive sputum cases be separated into two groups:

(1) the positive sputum patient with remedial disease, and (2) the positive sputum patient who has little hope of recovery. Hospitalize first the remediable positive sputum group. In this way both isolation and treatment are accomplished. The irremediable positive sputum case might be isolated in a single room in a general hospital during the terminal episode. In the event that such arrangements are impracticable, the hopeless case must be cared for in the home under the best possible isolation technique, with home instruction and contact follow-up by public health nurses. Such a practice protects the community and provides the opportunity to restore the health of at least some whose disease is not yet beyond repair.

We must think of the community first and the individual next when hospital beds are limited. We must guard the health of all the known tuberculous in the community and not just the individuals who, often by chance, fall into the hands of the expert in chest diseases. Available beds should be used principally for the spreaders of tuberculosis whose lesions can be arrested, and for proved minimal cases with definite clinical or laboratory evidence of active disease. This is in accord with changing social views on illness. It is becoming more and more widely recognized that a tuberculous patient is not only a private patient under the care of a doctor but also a carrier of a disease in the community. Therefore, the physician has a certain public as well as private responsibility. The private physician must report all his tuberculous cases to the health department, so that the number and whereabouts of the cases will be known. If a patient does not return for supervision, the physician has the further responsibility of reporting this fact to the health department, so that the department can take immediate action and bring the patient under medical care and isolation. In this respect he is an agent of the health department and is an extremely important factor in the promotion of community health.

In spite of the increase in knowledge of the epidemiology of tuberculosis since the time of Pasteur and Koch, the principal question that remains unanswered is, "Why do some people develop tuberculosis and others fail to do so?" We have yet to determine the total and inter-related effect of time, intensity, frequency, and duration of exposure. We must evaluate the effects of unfavorable environmental conditions in the family, community, and geographical area. Such complex factors as sex, age, color, and many racial stocks with complex hereditary and constitutional attributes must be analyzed.

There are fields without number awaiting exploration. Many guideposts are unmistakably present, in the form of accurate and complete statistics on tuberculosis. Unfortunately, the number of scientific explorers is small. Each year the group of trained epidemiologists is further reduced to supply the need for public health administrators for state and local health departments. Indeed, a basic problem of epidemiology is that of recruiting and training an adequate body of capable investigators. Our only hope is for medical schools and general practice to provide some worthy candidates.

Many questions in the epidemiology of tuberculosis remain unsolved because of the lack of efficient tuberculosis record systems in otherwise effective health departments. Better records, and time for their analysis, could reduce the number of past mistakes and enable us to determine if what we have proposed and carried out has accomplished the desired end. In areas that have established tuberculosis control programs, case registers can be used both for case management and as current sources of valuable data for epidemiologic investigation. A perpetual inventory of the case load, with interval evaluation of the effectiveness of activities, in relation to their cost, provides a realistic appraisal of the extent of the problem. Smoothly functioning record systems are essential tools for successful administration of a tuberculosis program, and create the opportunity for the discovery of new knowledge and for improved methods of control. Carefully devised record systems make the practice of public health, as applied to tuberculosis, a science and not just empirical guesswork. Long-range planning, based on predictions derived from analysis of reliable epidemiologic data, promotes economy of program operation and definitive results.

Summary

Much could be learned about the epidemiology of tuberculosis if we could encourage the participation of more general practitioners in our field studies throughout the country. Although the general physician deals directly with the source material of tuberculosis, he infrequently recognizes the disease in its early stages, because he does not constantly search for it with the tools at his command. The routine use of the tuberculin test on every person who visits the rural doctor's office would uncover a surprising number of hidden and unsuspected cases of tuberculosis. The examination of family contacts and a search for the original spreader leads the family physician away from his relentless daily routine into exciting by-paths of epidemiologic investigations. Through the utilization of modern methods of diagnosis and follow-up, the rural physician extends the frontiers of knowledge in this puzzling disease.

In spite of the great amount of knowledge that still remains hidden from us, the study of epidemiology, as Chapin has aptly pointed out, has profoundly modified our methods of dealing with contagious diseases. The discovery of the cause of tuberculosis and some knowledge of its mode of spread are fundamental to an effective control program. As our knowledge increases it becomes the province of epidemiology to plan and try out new and more efficient methods of control. Knowledge includes more than morbidity and mortality statistics. The epidemiologist who studies the intricacies of the changing pattern of the spread of tuberculosis must be familiar with statistical methods in order to avoid losing his way in a maze of figures. As scientific investigations go forward, and as accurate and complete data accumulate, the best safeguards for sound inferences are: (1) proper selection of data; (2) judicious use of controls; and (3) the orderly array of facts in their proper relation to present information about the disease. Conclusions based upon such interpretations of data will be sound and should increase the efficiency of our methods of controlling tuberculosis.

The deadly quarrel between microbe and man will continue unabated unless we apply all the measures at our command to insure the protection of the whole population within a short

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THE MEEKER COUNTY TUBERCULOSIS CONTROL PROJECT

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EARLY in August, 1940, a telephone call was received from the Committee on Tuberculosis of the Minnesota State Medical Association requesting that a few of its members be permitted to meet with the physicians of Meeker County. A luncheon meeting was arranged on August 19, and we were informed that in February, 1940, the state committee had determined to recommend a statewide tuberculosis control program to be initiated and conducted by the State Medical Association. On March 26, 1940, this committee decided to select a county in which an ideal tuberculosis control program would be developed by local physicians and that this area would serve as a demonstration for the remaining eighty-six counties of the state. At subsequent meetings, numerous counties were considered, and on August first the members of the committee voted unanimously to ask the physicians of Meeker County to undertake the countywide proposed demonstration. This county was selected because:

1. The first tuberculosis survey among humans in Minnesota was conducted here by Dr. Lampson in 1912.
2. When the county area plan of controlling tuberculosis among cattle was undertaken by the State of Minnesota in 1923, Meeker County was selected for the beginning of this work. In other words, this was the testing ground for the state program.
3. The committee had determined that all physicians practicing in Meeker County had a modern viewpoint on tuberculosis control and would work in harmony on a countywide project.

After all of this was explained on August 19, our members agreed to give the project most careful consideration. In November, 1940, and for several months thereafter, the state committee held practically all of its regular meetings in Litchfield, our county seat, and the physicians of the county as well as a few from adjacent counties regularly attended these meetings. Presidents of the state association, including B. S. Adams and B. J. Branton, as well as members of the council, including Carl Johnson, E. J. Simons and C. A. Stewart, were present on several occasions to assist in formulating our program. In these evening meetings, which often lasted for hours, various phases of the proposed project were discussed. Meetings were also held for the leaders of lay organizations and for the general public, in order that everyone might have an opportunity not only to know about the proposed project but also to offer suggestions for its execution. In the early spring of 1941 it appeared that the necessary preparations had been made, and the physicians were ready to proceed with the examinations the first of May. It had been agreed that the procedure should consist of testing the entire county population with tuberculin in order to find all who were infected with tubercle bacilli. This was to be followed by x-ray film inspection of the chests of reactors, and those with shadows indicating the presence of pulmonary disease were to be completely examined in order to ensure accurate diagnoses.

At first no funds were available to pay for materials or any phase of the work. However, it was not long before the Minnesota State Medical Association, the American Medical Association, the National Tuberculosis Association, the State Public Health Association and the local tuberculosis society contributed adequate funds. Our physicians agreed to administer the tuberculin test, interpret all x-ray films and do all necessary phases of the examination without charge. The State Department of Health agreed to furnish the tuberculin and to deliver it weekly in dilutions ready for administration. Our physicians decided to use x-ray films which were purchased and delivered to us by the state committee. From the same funds x-ray technicians were paid a small amount for exposing and developing the films and for purchasing necessary materials for keeping records, postage, et cetera. Every detail of the project was to be conducted by the citizens of Meeker County.

Saint Paul and Minneapolis newspapers gave wide publicity to the project, even publishing articles concerning it in Sunday editions. *Everybody's Health* supported and publicized the project in a wholehearted manner. Fine editorials

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Dr. Danielson is chairman of the Meeker County project.

and articles were published in MINNESOTA MEDICINE. The Meeker County newspapers were exceedingly generous with space, urging everyone to co-operate. We received help from the pastors of various churches, superintendents of schools, and very substantial aid from the Farm Bureau. *Collier's* published an article with colored illustrations on May 2, 1942, entitled, "Worth More than a Cow." The Minnesota Public Health Association lent us motion picture films pertaining to tuberculosis which were shown in the rural district schools and at parent-teacher association meetings. At some of these sessions, talks were given by local physicians.

Postcards were prepared containing the following message: "You and your family are invited to come to your doctor's office for a tuberculin test, and if a reaction occurs, an x-ray film will be made of your chest for which there will be no charge. Signed: The Meeker County Medical Society." These cards were mailed at two-week intervals, first to the towns and villages and then one township at a time, until the entire county had been circularized. It was planned to follow up this volunteer program with one or two public health nurses arranging meetings in outlying districts and, if necessary, going from home to home.

With the declaration and prosecution of war, resulting in rationing of gasoline and restriction of travel because of rubber shortage, it became difficult for the farmers to respond to the invitation as they did before these restrictions were instituted.

Moreover, enlistment of physicians and nurses, the removal from the county of so many persons who were supporting the campaign, resulted in marked retardation of our tuberculosis activities. In fact, they came almost to a standstill for reasons beyond our control. The population, which was approximately 19,000 before the war, was reduced to slightly more than 16,000 by Selective Service and removal of defense workers. Efforts made to procure workers nearly always ended in failure.

Under the circumstances it seemed futile to continue the project as a demonstration. Therefore, it was closed when approximately two-thirds of the citizens had been examined. Most of the 10,733 persons who were examined reported early in the campaign. No objection was voiced at that time to the tuberculin test or any other phase of the examination. The citizens were enthusiastic, and had it not been for the war, we believe that not less than 90 to 95 per cent of our citizens would have been examined.

Among the 10,733 who reported, 2,445 (22.8 per cent) reacted to tuberculin. Of the total number of tuberculin reactors, 2,031 reported for x-ray inspection of the chest. The failure of the remaining 414 was largely due to travel difficulties during the war. Among the 2,031 persons who reacted to tuberculin and had x-ray film inspection of the chest, there were sixteen who presented x-ray shadows that were definitely proved by other phases of the examination to represent clinical tuberculous lesions. Thirteen of the sixteen were sent to sanatoriums, and the remaining three were treated by private physicians.

Our physicians are greatly pleased with the results of this campaign, despite the fact that the project had to be discontinued after approximately two-thirds of our citizens had been examined. It resulted in the removal from society of sixteen active cases of the reinfection type of tuberculosis. Of great importance to us is the information obtained with reference to tuberculous infection. We know that only approximately 23 per cent of our citizens carry living tubercle bacilli in their bodies. In other words, the tuberculosis work previously done in Meeker County has been effective, since 77 per cent of our population have apparently been protected against tubercle bacilli. The present 23 per cent represent such a limited group of the population that it is possible to institute and maintain an intensive education campaign among them so that they may be on guard with reference to the subsequent development of clinical lesions. The 77 per cent of uninfected persons have been advised to be retested from time to time and, if infection occurs, to be periodically examined for clinical lesions.

There was so much publicity throughout the county concerning this project that there probably are few, if any, citizens who did not learn something about tuberculosis. Therefore, we are of the opinion that many of our citizens whom the project did not reach will request adequate examination for tuberculosis. Although the project as such has been discontinued, many persons, particularly since the end of the war, have requested special examinations for tuberculosis.

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TOXOPLASMOSIS

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TYPICAL toxoplasmosis occurring in a fourteen-year-old female resident of Minnesota was reported by Adams, Horns and Eklund[1] in 1946. Neutralizing antibodies for the toxoplasma organism were present in the blood of the patient as well as in that of the mother and in eight of nine siblings tested. The mother and siblings showed no clinical signs or symptoms of the disease by physical or roentgenologic examinations.

The first case of human infection with toxoplasma was reported in an infant in 1923 by Janku,[3] who described the organism but did not identify it. The second case was reported in an infant by Torres in 1927. Wolf and Cowen[10] in 1937 described another infantile infection, giving full clinical and pathological findings, and in 1939 Wolf, Cowen and Paige[11] described a similar case from which the toxoplasma organism was recovered by intracerebral inoculations of rabbits and mice with brain tissue taken at autopsy. Identity of this organism with a strain of toxoplasma isolated from laboratory animals was shown by cross-immunity tests, thus definitely establishing the etiological agent. Since 1940, cases of fatal toxoplasmic infections in adults[4,5] and in children[7] as well as several nonfatal cases have been recorded.

The toxoplasma organism is regarded as a protozoan parasite and has at times been confused with other protozoan parasites such as Leishmania, Encephalitozoon and avian malaria. Identification is definitely determined by animal inoculation; however, the presence of characteristic organisms in the tissues is now generally considered diagnostic.

Although the parasites have more frequently been demonstrated in nerve tissue— meninges, cerebral cortex, basal ganglia, pons, medulla, spinal cord and retina—they have also been found in alveolar epithelium of the lung, myocardium, adrenals, reticuloendothelial and parenchymal cells of the liver, kidney, bone marrow, endothelium of arterioles and venules, skeletal muscle, skin and subcutaneous tissue.

Spontaneous infection in animals is widespread and has been recorded in the dog, cat, rat, mouse, guinea pig, mole, sheep, baboon, chimpanzee and numerous kinds of birds. Instances of human infection have been observed in Australia, Europe, South America, and in several states of the United States of America. At present the routes of infection and other epidemiological factors are unknown.

Human toxoplasmic infections may present several types of clinical manifestation. Sabin[9] has summarized six clinical forms. Callahan, Russel and Smith[2] in a recent comprehensive review of the disease described infantile and adult toxoplasmosis with subtypes of each.

The infantile form is frequently fatal, the disease being present at birth or appearing a few days or weeks thereafter. The outstanding signs and symptoms of these cases are internal hydrocephalus, convulsions, muscular twitchings, chorioretinitis, ocular palsies, spasticity, jaundice, intracerebral calcifications, hepatosplenomegaly and respiratory disturbances. Usually this type of infection is acquired *in utero,* and the mother has neutralizing antibodies for toxoplasma in her blood.

The juvenile form may or may not result fatally, and although it is most frequently of acute encephalitic form, it may exhibit predominantly the symptoms of acute exanthematic disease and/or atypical pneumonia. It is not always evident whether juvenile toxoplasmosis is the result of acquired infection or of a reactivation of latent intra-uterine infection.

Adult toxoplasmic infections have been observed in two main types. In one type, the clinical signs and symptoms are variable but in general are characterized by sudden onset, elevation of temperature, maculopapular eruption and pulmonary involvement. The signs and symptoms referable to the central nervous system may be relatively insignificant. There is more tendency for widespread involvement of the viscera than in the infantile disease.

The other type of adult infection appears as a chronic disease and may show no signs or symptoms of the process except that neutralizing anti-

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From the Section of Medical Laboratories, Minnesota Department of Health, University Campus, Minneapolis, Minnesota.

bodies are present in the blood. This type of disease has been observed in mothers of infants dead of intra-uterine infection.

"Neutralizing antibodies against toxoplasma are formed by the host, and their demonstration is the most reliable method available for clinical diagnosis of the disease."[2] Sabin[8] has shown that, in monkeys, neutralizing antibodies for toxoplasma persists after the organisms are no longer demonstrable in the tissues, and that the presence of antibodies alone is not indicative of active infection; however, it does show that the individual has been exposed to the antigen substance of toxoplasma at some time.

TABLE I. RESULTS OF NEUTRALIZATION TESTS FOR TOXOPLASMA FOR THE YEARS 1944 TO 1946, INCLUSIVE

Year	Results of Examination							
	Positive		Negative		Unsatisfactory		Totals	
	Patients	Spec.	Patients	Spec.	Patients	Spec.	Patients	Spec.
1944	22	29	30	33	0	0	52	62
1945	46	56	184	196	2	2	232	254
1946	95	112	376	397	6	7	477	516
Totals	163	197	590	626	8	9	761	832

The neutralizing antibodies are quite labile and may disappear in a day or two at room temperature, or in two weeks at ice box (5° C.) temperature. For this reason specimens of blood to be examined for toxoplasmic antibodies must be sent to the laboratory without delay. During warm weather, or at any time when more than twenty-four hours are required for the specimen to reach the laboratory, the serum should be separated from the cells and forwarded in a package containing dry ice (solid CO_2).

Because of the growing interest in these infections, the Minnesota Department of Health Laboratories began the neutralization tests* for the toxoplasma organisms in January of 1944, and have continued this service to date. The technique of the test is essentially that described by Sabin[6] in which patients' blood serums are mixed with suspensions of the organism and inoculated into the skin of white rabbits.

The blood specimens usually were collected from individuals showing one or more of the following: chorioretinitis, convulsions, hydrocephalus, cerebral calcifications, mental retardation, and encephalitis; or from the parents and siblings of individuals who had previously shown a positive neutralization for toxoplasma. The series reported includes patients from public and private institutions as well as from general practice throughout the state.

In the years 1944 to 1946, inclusive, 832 specimens were examined from 761 patients who were residents of sixty-three Minnesota counties, and twenty-two other states. The results of the tests are summarized in Table I.

Sufficient data are not available to determine the exact number of active infections represented by the positive tests; however, the relatively high percentages—42.3 in 1944, 19.8 in 1945 and 18.4 in 1946—probably reflect the judicious choice of patients on clinical grounds rather than the overall incidence of toxoplasmic infection in Minnesota. A sufficient number of apparently normal individuals have not been examined as yet to determine the incidence in the population at large. Neutralizing antibodies were demonstrated in residents of twenty-five counties in the state, which indicates that the infection is widespread. Neutralizing antibodies were also demonstrated in residents of seventeen other states.

During the three years' experience, ninety-three pairs of serums from mother and child were tested, with the following results:

Mother positive—child positive	19
Mother positive—child negative	13
Mother negative—child positive	9
Mother negative—child negative	52

The results of the tests for mother and child agreed in seventy-one (76.3 per cent) pairs of the specimens. The combination "mother positive—child negative" occurred a little more frequently than the combination "mother negative—child positive." Conclusions relative to acquired infection versus intra-uterine infection are not apparent from these data.

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*The neutralization tests were originally conducted by Dr. Carl Eklund whose present address is U.S.P.H.S., Rocky Mountain Laboratory, Hamilton, Montana.

Physicians who submitted blood specimens for the neutralization tests were asked to supply a short history for each patient. A part of this information is summarized in Table II.

febrile disease with extensive maculopapular rash involving nearly the entire body. A second type of adult infection appears as a chronic process and presents no signs or symptoms of the disease except for neutralizing antibodies in the blood.

TABLE II. ASSOCIATION OF CHORIORETINITIS, CONVULSIONS, HYDROCEPHALUS AND CEREBRAL CALCIFICATIONS WITH POSITIVE AND NEGATIVE NEUTRALIZATION TESTS FOR TOXOPLASMA

	Positive Neutralization				Negative Neutralization			
	Present	Absent	Not Stated	Total	Present	Absent	Not Stated	Total
Chorioretinitis	19	33	30	82	10	66	24	100
Convulsions	18	32	32	82	23	46	31	100
Hydrocephalus	7	37	38	82	16	51	33	100
Cerebral calcifications	4	36	42	82	1	64	35	100

In these groups of patients, chorioretinitis was associated with postive neutralization tests (23.2 per cent) more than twice as often as with negative neutralizations (10 per cent). The incidence of convulsion was about the same in the two

Toxoplasmic infections are probably widespread in Minnesota as indicated by the presence of neutralizing antibodies in the blood of individuals from twenty-five counties in the state.

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In these groups of patients, chorioretinitis was associated with postive neutralization tests (23.2 per cent) more than twice as often as with negative neutralizations (10 per cent). The incidence of convulsion was about the same in the two groups, while hydrocephalus was associated with negative neutralization tests (16 per cent) more frequently than with positive neutralizations (8.5 per cent). The number of cerebral calcifications was probably too small to permit a valid comparison.

Summary

Toxoplasmosis is a disease resulting from infection with the protozoan parasite toxoplasma. Infection may occur *in utero* or be acquired at any age. Infantile toxoplasmosis is usually characterized by widespread destruction of the central nervous system, and, in surviving cases, residuals such as hydrocephalus, convulsions, chorioretinitis and mental retardation are frequent.

The symptoms of adult toxoplasmosis may be extremely variable, with a greater tendency to widespread involvement of the viscera than in infantile infections. It may occur as an acute febrile disease with extensive maculopapular rash involving nearly the entire body. A second type of adult infection appears as a chronic process and presents no signs or symptoms of the disease except for neutralizing antibodies in the blood.

Toxoplasmic infections are probably widespread in Minnesota as indicated by the presence of neutralizing antibodies in the blood of individuals from twenty-five counties in the state.

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There is no doubt that the most important of all case-finding agencies in the fight against tuberculosis are its practicing physicians. It is almost always true that the family physician has the first opportunity not only to ascertain the presence of tuberculosis among the people, but also to give battle for the cure of the afflicted and to safeguard the other members of the family from the tubercle bacillus. It is the family physician to whom most people go when troubled by signs of ill health.

The records in the chest diagnosis clinics prove that the physicians, if they are determined to do so, can perform a better job of suspecting and discovering active tuberculosis cases, year in and year out, than any other agency. Report of Comm. on Tbc. N. H. Med. Soc., *New England J. Med.*, Sept. 26, 1946.

TRICHINOSIS IN MINNESOTA

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SINCE 1913, when reporting of communicable diseases in Minnesota was made mandatory by legislation, there have been 157 cases of trichinosis with fourteen deaths reported to the Minnesota Department of Health. The largest number, forty-two cases and one death, was reported in 1934. In the ten-year period from 1937 to 1946, there were thirty-two cases with two deaths. The cases have occurred sporadically and in small family outbreaks and have been scattered throughout the entire state. The largest outbreak in Minnesota was in 1934, when twenty-three cases, including one death, occurred in one family and its relatives.

In a report of an outbreak of eighty-four cases in New York City in 1945, Shookhoff, Birnkrant and Greenberg[8] reviewed outbreaks involving twenty or more cases reported in the literature since 1900, and found twenty-one such outbreaks ranging from twenty-one to 617 cases. Riley and Scheifley,[6] in examining material from 117 cadavers from the dissecting room, found 17.9 per cent infected with trichinosis. Nolan and Bozicevich[4] report that 174 (17.4 per cent) of diaphragms of 1,000 autopsy cases were found to be infested with trichinae. Evidently there are many subclinical cases and others that are not recognized clinically, and perhaps some that are not reported.

On January 29, 1947, the possibility of an outbreak of trichinosis was brought to the attention of the Minnesota Department of Health. On investigation, a total of thirty-seven clinical cases of trichinosis, with dates of onset of symptoms between January 10 and January 29, were disclosed. Thirty-three of the cases occurred in one community, a small village whose inhabitants are predominantly of Central European stock, accustomed to eating sausage frequently and often raw. Two cases occurred in Chicago and one each in Minneapolis and Saint Paul. There were twenty-three males and fourteen females affected, the ages ranging from fifteen to sixty years. Clinical histories were obtained in twenty-two of the thirty-seven cases, with symptoms as summarized.

	Number	*Per Cent*
Edema of eyelids	18	82
Muscle pain	18	82
Fever	12	55
Malaise	10	46
Diarrhea	8	36
Weakness	5	23

The usual incubation period is six or seven days, but may be as short as eighteen hours in heavy infections, or as long as twenty-eight days. The history of classical, initial diarrhea was obtained in only three cases, though eight individuals complained of diarrhea. The usual presenting symptoms were itching and redness of the eyes with edema of the lids, and muscle pains, especially of the extremities. Other frequent symptoms were fever, malaise, and weakness. Sore throat, edema of face, nausea and vomiting, abdominal cramps, pain in chest, and sweating were other complaints. Some of the individuals appeared critically ill and very toxic, but there were no fatalities, a situation which seems characteristic of larger-scale outbreaks in recent years.

Differential leukocyte counts obtained in twenty-three of the cases, January 30-31, 1947, showed an eosinophilia ranging from 7 to 49 per cent. In three of the cases there was a leukocytosis ranging from 12,450 to 20,000.

Eosinophil Count (per cent)	*Number Cases*
7 to 10	1
10 to 19	3
20 to 29	8
30 to 39	7
40 to 49	3

In two cases, *Trichinella spiralis* was demonstrated in muscle biopsies, one from a specimen submitted to the Section of Medical Laboratories, Minnesota Department of Health, and one reported from the Veterans Administration. Two pathological specimens reported by private physicians showed a concentration of eosinophils present in the muscle.

Of thirty cases in which an epidemiological history was obtained, all gave a history of having consumed smoked country sausage. In twenty-four of the cases the sausage was eaten raw, in two fried, and in four cases it was not determined whether the sausage was consumed raw or cooked. The two afflicted individuals in Chi-

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cago had ordered the sausage by mail from relatives living in the community. The Minneapolis resident purchased sausage when passing through the village and shared it with the Saint Paulite. The sausage was prepared for public sale by a local butcher from trimmings of freshly slaughtered pork, ground, seasoned, and smoked for twenty-four hours at a temperature that would not cause the sausage to shrink. The sausage was then refrigerated at 36° F. for one week. According to the butcher, patrons were advised to eat the sausage only after cooking. Only pork from hogs purchased and slaughtered locally was used. As no record was kept on hogs slaughtered, and trimmings from several hogs were used in making approximately 100 pounds of sausage weekly, it was impossible to determine the origin of the pork used. No samples of the suspected sausage were available for laboratory examination.

According to Ober[5] and Gould,[1] only 60 to 70 per cent of hogs slaughtered in this country are slaughtered in Federally inspected slaughter houses. The incidence of infection with live trichinae among hogs is estimated by Gould[2] as between 1 and 2 per cent. Under Federal inspection, no attempt is made to examine pork for the larvae of *Trichinella spiralis,* as the examination is considered time-consuming, expensive, and impractical. Therefore, all pork or pork products that are likely to be eaten raw are considered infectious, and according to Federal meat inspection regulation are processed either by heating to 137° F. or by storing for twenty days at a temperature of 5° F.[7] In Minnesota, as well as most other states, this regulation does not apply to local butchers or abattoirs not engaged in interstate shipment of pork or pork products. Trichinous meat can be rendered non-infective either by heating to 55° C. or freezing at temperatures sustained long enough to kill the larvae.

Pork has been involved in all cases in Minnesota where a source of trichinosis has been suspected or found. Westphal[9] reports a case of trichinosis in which the apparent source was bear meat from a bear killed in New York State. Westphal also cites a report of Geiger and Holmaier involving twenty-nine cases with three deaths occurring between 1930 and 1935 in California, due to eating bear meat. These authors maintained also the "possibility of the infection of rats, wild hogs, cats, foxes, coyotes, badgers and ferrets." Hall[3] states that two or three cases have been reported from eating beef, and one from dog meat, but he points out that these are not important in the control of trichinosis, which is essentially concerned with pork, "the customary source of trichinosis."

At present the prevention of trichinosis is the concern of the consumer. No fresh pork should be eaten "pink." When pork has been changed by cooking to a whitish color, it has reached a temperature of at least 137° F., which destroys the viable trichinae. The publication *The Control of Communicable Diseases,* published in 1945 by the American Public Health Association, recommends a temperature of 150° F. Pork products processed under Federal regulations are considered safe, but the consumer does not always know when such products actually have been processed at a Federally inspected plant. Therefore, the only safe rule for the consumer is to cook pork and pork products adequately.

Many measures have been advocated for the control of trichinosis. These measures are principally the following: (1) microscopic inspection of pork; (2) cooking of all garbage used for hog feeding; and (3) processing of all pork prior to sale to the consumer. Each method has its advocates and points to recommend it, and each method has its drawbacks.

Summary

An outbreak of trichinosis involving thirty-seven known clinical cases is reported in order to call the attention of physicians in this state to the fact that trichinosis is a serious problem and an ever-present threat to the public. Prevention of trichinosis is at present the concern of the consumer, and the only safe advice is to be sure that all pork is thoroughly cooked or adequately processed before consumption.

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DEAFNESS, A THERAPEUTIC PROBLEM

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We maintain contact with our environment chiefly through two senses—vision and hearing. Many people lose one of these senses more or less completely, and occasionally some unfortunate individual loses both. Patients who lose their vision generally seem to make a satisfactory adjustment to their handicap and live on confidently and happily. On the other hand, people who lose their hearing are prone to become depressed, diffident, and uncertain. For this and other reasons deafness is a therapeutic problem of utmost importance.

Deafness may be divided roughly into three groups: The first group includes those cases which are due to mechanical interference with the vibrating parts (conduction deafness). The second group includes those which have suffered damage within the cochlea (nerve deafness). The third group includes miscellaneous intracranial conditions such as tumor, meningitis, certain rare bone diseases and probably also cerebral arteriosclerosis.

This discussion is concerned with the first two groups. These do not usually occur as separate entities, but are generally combined, with one type or the other predominating. Deafness from acute otitis media is an example, however, of pure mechanical deafness, whereas deafness from mumps furnishes an example of pure nerve deafness.

Middle ear or conduction deafness has a number of causes, prominent among which are acute and chronic otitis media, mastoiditis, pathologic changes of Eustachian tube and otosclerosis.

Acute otitis media interferes with vibration of the drum head and the ossicles because of swelling and exudation. It is usually self-limited and leaves no permanent hearing loss, unless neglected.

Chronic otitis media causes some deterioration of hearing as long as it exists and is prone to make permanent pathologic changes in the middle ear which cause permanent loss of hearing. These sequelae include thickening of the drum and epithelium, adhesions, retraction and perforation of the drum.

Chronic mastoiditis may be on a basis of osteitis, but is more often due to a cholesteotoma in the attic and antrum. There is continuous discharge with continuous low-grade inflammation which interferes with vibration of the drum and ossicles and eventually causes permanent changes in these structures.

Inflammatory changes and hypertrophies in the Eustachian tube or at its pharyngeal extremity, cause hearing loss by cutting off the middle ear from atmospheric pressure. The air pressure on both sides of the drum head must be equal in order to permit free vibration. Normally the pressure is equalized frequently through the Eustachian tube during swallowing and yawning. When the tube does not thus open, because of swelling, or for some other reason, a partial vacuum results in the middle ear together with some impairment of hearing. In children, this is often due to lymphoid hypertrophy at the pharyngeal end. Many adults have slit-like Eustachian openings in the pharynx instead of round ones. These people are prone to have ear discomfort and impaired hearing following marked changes in barometric pressure. A new type of ear disease related to the Eustachian tube has developed as a result of aviation and of submarine warfare known as aero-otitis media or aerotitis. It has been reported (Schilling[1]) that 30 per cent of the men undergoing submarine escape training have aural difficulty leading to loss of auditory acuity.

Otosclerosis is an inherited disease of the bony capsule which surrounds the internal ear. It is thought to be harmless except for its mechanical effect. It causes an overgrowth of the bony margin of the oval window thus impinging upon the vibrating footplate of the stapes. When the footplate of the stapes becomes fixed and ceases to vibrate in response to the sound waves playing against the drum membrane, the hearing acuity becomes very seriously reduced (Fig. 1). The hearing organ otherwise may remain more or less normal, but it becomes separated from the vibrating portions of the ear mechanism by a wall of bone, so to speak.

Read before the Upper Mississippi Valley Medical Association, February, 1946.

Treatment.—The treatment of acute otitis media and the deafness incidental to it is largely preventive. If colds can be prevented, and when they occur, if they are treated by bed rest and isolation, otitis media ordinarily does not occur. When otitis media does occur, it can usually be cleared up fairly promptly with standard procedures such as dry wiping, instillation of antiseptic solutions, free drainage, diathermy, and, when necessary, bed rest, sulfonamides or penicillin. Reduction in hearing acuity may persist for a week or two after drainage ceases, but soon returns to normal without any permanent effects.

Chronic otitis media is not nearly as prevalent as it used to be because of the better care given to acute otitis media and upper respiratory infections in general. When it does occur, it is much more of a problem than the acute, but this also can usually be cleared up with or without surgery, and practical conversational hearing preserved. Any loss will depend upon the permanent pathologic changes in the middle ear. A generation ago, there was much enthusiasm about dividing adhesions in the middle ear resulting from chronic otitis media and freeing the malleus and drum by stretching adhesions. One does not hear much about this at present. Dividing adhesions whether in the ear or peritoneal cavity, is not highly successful.

Perforations in the pars tensa (sequelae of chronic otitis media) are more amenable to treatment. They can sometimes be induced to close up by gently cauterizing the margins and thus encouraging scar formation. These scars tend to contract and to close the hole. Patches placed over perforations are successful in two ways: They encourage closure of the opening by new tissue and at the same time make the patients hear better while the patch is worn. For instance, we have a young housewife as a patient at present, who has a large perforation in the left drum. We have been treating her by placing a patch cut from cigarette paper and soaked in glycerine over the perforation. She hears very much better as soon as this is in place. It must be renewed every two or three weeks.

The hearing is often improved, or at least conserved by radical mastoid operation if a chronic otitis or mastoiditis does not respond to more conservative treatment. This is especially true if the pathologic condition consists chiefly of a cholesteatoma in the antrum and if the middle ear is reasonably intact. If, on the other hand, there is osteitis in the wall of the middle ear, then the middle ear and its contents must often be sacrificed to effect a cure of a dangerous infection, and the hearing may be further reduced.

There is another type of middle ear deafness which is connected with infantile or undeveloped mastoids. It is probably not essentially different from the chronic adhesive process which follows the healing of an extensively damaged middle ear. However, there is nothing abnormal to be found upon examination except reduced hearing and an infantile mastoid. The latter usually means that there has been otitis media in infancy. For this deafness, there is not much that can be done directly. But it is important to find children who suffer from this handicap through screening tests in school and to see that they get proper aids to hearing, such as special seating in the class room, special classes or even hearing instruments. Much good is being accomplished now by hearing tests in school and through the educational programs of such organizations as the American Hearing Society.

The success in treating a pathologic condition in the Eustachian tube depends upon its nature. If it is a true stenosis of the tube, treatment will probably accomplish nothing. On the other hand, as not infrequently happens, there may be hypertrophied lymphoid tissue in the cushion and pharyngeal orifice. This can be treated successfully by radium used in proper applicators or by deep x-ray therapy.

Aero-otitis media can be largely avoided by eliminating such young men from the air and submarine service who have slit-like Eustachian orifices and who develop ear discomfort under an increased atmospheric pressure of ten or eleven pounds. Those who cannot inflate the middle ears by holding the nose and mouth closed during attempted expiration, should also be eliminated.

Blast injuries may damage the drum and middle ear as well as the cochlea, but these will be discussed later.

The surgical treatment of otosclerosis is one of the encouraging bright spots in otology. It has been met by a wave of enthusiasm among otologists similar to that which swept the internists with the advent of insulin.

There is no other treatment than surgery which has been of any avail. Until the operation of fenestration was developed, these patients experienced a steadily progressive loss of hearing.

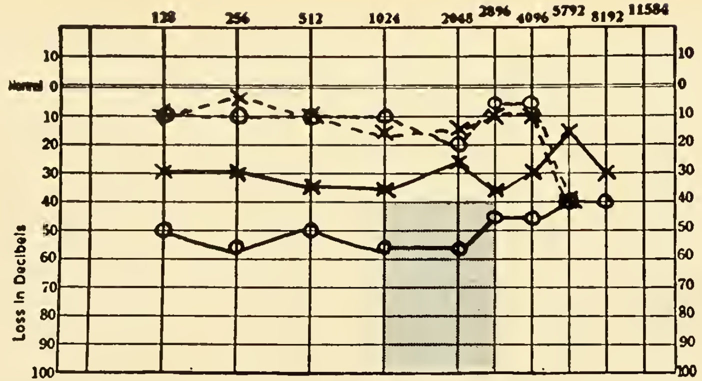

Fig. 1. Audiogram of a case of clinical otosclerosis. The solid lines show hearing by air conduction, and the dotted lines, hearing by bone conduction. The circles (o) indicate the right ear and the crosses (x) indicate the left ear. If this patient were to have a fenestration performed, the right ear would be selected because this is her worse ear. The bone conduction remains good and the prognosis for serviceable hearing in this ear without a hearing aid would be good. Operation was not advised, however, because the hearing of the left ear is already at this level of practical hearing, and the hearing acuity of the right ear might not exceed that of the left ear even after successful operation.

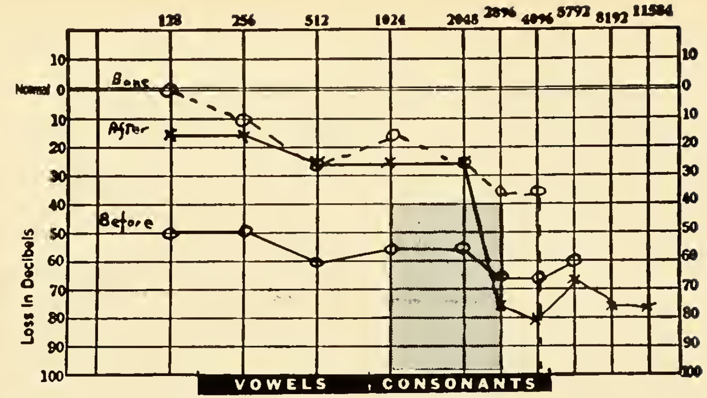

Fig. 2. Audiogram of one ear before and after successful operation in a case of otosclerosis. The dotted line represents hearing by bone conduction and the solid lines, by air conduction, before and after operation. The most important tones in conversation are those below and including 2048 vibrations (high C). This patient received an average improvement of about 30 decibels which brought her hearing acuity above the threshold of practical hearing, and the result was excellent. The threshold for practical hearing is considered to be at about 30 decibel loss.

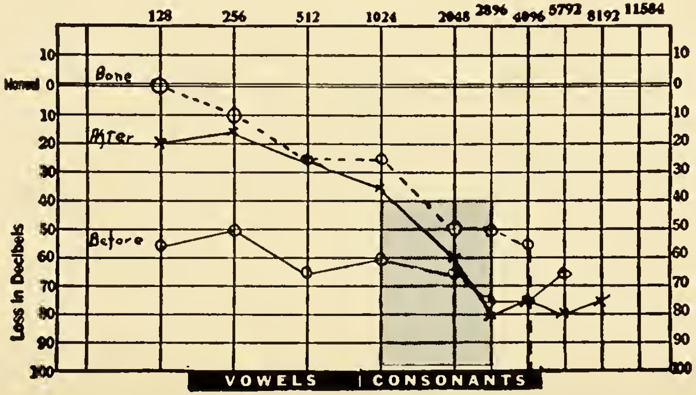

Fig. 3. Audiogram from an ear in which the bone conduction loss at the 2048 tone was considerable. This loss lay in the range of consonant sounds. The operation was successful in raising the hearing level by air up to or above the serviceable 30 decibel level in the tonal range below 2048 vibrations, but the patient still had some trouble in conversation because some of the consonant sounds were not heard on account of the loss of nerve function (bone conduction) in this high-pitched register.

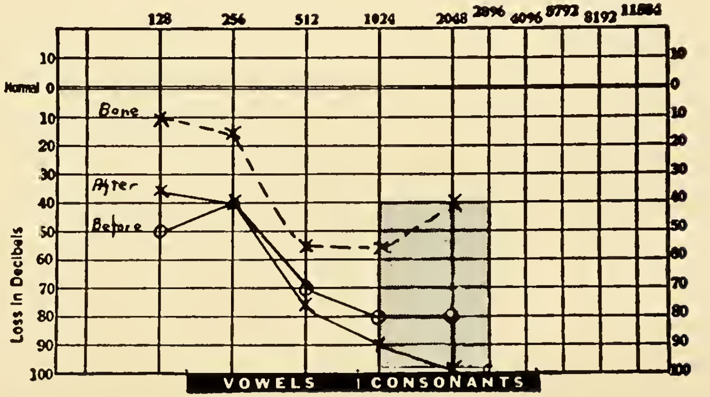

Fig. 4. Audiogram from an advanced case of otosclerosis before and after operation. The nerve degeneration as indicated by bone conduction was great. The patient was informed that the prognosis for servicable hearing was very poor, but he wanted to "take a chance." There was no improvement.

The operation consists essentially in making a new artificial window to replace the one which has become ankylosed by the otosclerotic process. It is technically difficult and time-consuming, and the results are by no means perfect. Only a selected group is suitable for operation—about one-third of all the patients showing clinical otosclerosis—and of those operated, none regain normal hearing. Most are greatly improved, some are not improved and a few are made worse. Nevertheless, the results are most gratifying compared with the former hopeless outlook, and both the otologists and their patients are very enthusiastic.. The patients whose hearing is restored to a practical level vary from 70 to 90 per cent of those operated upon. The percentage depends upon the care with which the cases are selected, and the boldness with which the surgeon undertakes to operate upon the less favorable cases.

Very briefly, omitting details, the operation is done as follows: The approach is made endaurally through the mastoid. The body of the mastoid is exenterated and the antrum and attic exposed to view. This brings into view the short process of the incus as it lies upon the bulge of the horizontal semicircular canal where the fenestrum is to be made. The posterior bony canal wall is largely removed, exposing the entire incus and the head of the malleus which must also be removed. The site of the horizontal semicircular canal is now well exposed but the canal itself is largely covered by bone and is brought clearly into view only after the latter has been removed by means of dental burrs used under magnification. The fenestrum is made at the anterior ampullated end of the semicircular canal close to the facial nerve. The fenestrum and surrounding bone must be so prepared that the skin flap which is to cover it will heal down tightly and smoothly before the bone gets a chance to regenerate. Unless the fenestrum remains open the operation is of no avail.

A skin flap is made from the thin skin of the deepest portion of the external ear canal in such a way that it remains attached to the upper margin of the drum and yet completely covers the fenestrum with a generous margin to spare on all sides. The flap is packed smoothly over the fenestrum and held snugly in place. An epithelial membrane of that sort has a mysterious power of preventing bone growth, and, if the flap heals quickly into place, there is little or no regeneration of bone.

This operation of fenestration is not new. However, its successful execution is new. It had been tried many times in Vienna twenty or twenty-five years ago, as well as elsewhere in Europe, but it was not permanently successful because the opening in the bone healed up. Several futile devices, including metal plugs, have been used in attempts to prevent closure. Holmgren, of Stockholm, was one of the first who was really successful in procuring permanent results. For the operation as it now stands, we are, however, largely indebted to Lempert (Figs. 2, 3, and 4).

Nerve Deafness.—There are many types of pathologic changes in the cochlea which are all grouped under this term. The ordinary senile type of nerve deafness is the most common. A large percentage of all people in the latter half of life are afflicted by it. I do not mean to imply that it is a sign of senility—it often begins in the fourth decade of otherwise vigorous people—but use that term for want of a better one. The disease is characterized by tinnitus and reduced bone and air conduction, especially of the high tone frequencies. Reduction of bone conduction is due to the fact that the hearing organ itself is damaged, in contrast to conduction deafness in which there is some derangement of the mechanism for conducting sound vibrations to the internal ear. The pathologic change is found in the organ of Corti where the sense cells disappear and the afferent nerve fibers atrophy. The effect, as far as the patient is concerned, is the loss of consonant sounds which are high pitched tones carried by vibration frequencies in the upper register. With the consonant sounds lost from speech, it seems to the patient that everyone with whom he converses speaks indistinctly. He hears the sound of the voice without any difficulty, but cannot distinguish the words. He is apt to burst forth, especially if talking to some of his own family, "Stop mumbling and speak out so that a body can understand what you're saying." To the otologist he will complain that in a group he can understand only that part of the conversation which is spoken directly to him. He can easily "hear" everything that is said otherwise, but cannot distinguish the words.

A very similar type of deafness is caused by noisy occupations, such as boiler making, shipbuilding, and rock crushing. It is very difficult to study these things experimentally with any degree of satisfaction. Pathologic changes can be produced readily in animals by subjecting them to loud continuous noise. But it is difficult to conceive of a method for determining the hearing loss. The changes, whatever they may be, are reversible up to a point, beyond which they become irreversible and the hearing loss is permanent. It is possible experimentally to produce temporary hearing loss and tinnitus in man under controlled conditions, but there is no way of determining the pathologic changes.

Blast injuries, such as those incident to war, may cause both middle ear damage and cochlear injury. An elderly Finnish gentleman came to me during the hunting season, stating that a hunting companion had shot at a deer over the patient's shoulder, and had hurt his ear terribly. Investigation revealed that the drum had been ruptured and badly lacerated. This does not usually happen with gun fire, but the internal ear may suffer damage from which it may or may not recover. Gunnery instructors may lose hearing acuity. Hearing acuity has been measured at varying intervals after exposure. Recovery takes place gradually after days, weeks, or months, depending upon the degree of injury and the individual's susceptibility to ear damage. The latter varies widely. If damage has been sufficiently severe, the process is not reversible, and hearing loss is permanent.

Toxic nerve deafness occurs following administration of various drugs and after certain infections. Quinine, salicylates and salol are examples of the former. Again, there are wide variations in susceptibility. Some individuals can take quinine in considerable dosage over long periods of time, whereas others cannot take small single doses without developing tinnitus.

Treatment.—The cause of the ordinary spontaneous senile nerve deafness is unknown. There is no known effective therapy. The hearing cannot be restored, nor can the progress of loss be stopped. Treatment is psychological and substitutional. The patient must accept his handicap and learn lip reading, or use a hearing aid. Treatment at present is a problem for teachers, psychologists, and producers of hearing aids, rather than for the otologist.

Occupational deafness is treated best by prevention. If it is impossible to reduce the noise in a factory, then those who are susceptible to noise should be screened out and urged to take other occupation. One individual may be able to work at a noisy job for years without injury to his hearing, while another may begin to lose hearing promptly. A shipyard worker of this type consulted me last summer. He was told, after examination, that he would suffer permanent damage to his hearing unless he quit his job. Since the shipyards were closing after sixty days, he elected to chance it that much longer. We have another patient at present who has been a telephone operator for twenty-four years. She has a marked loss of hearing which may be from her work. She is only a year from retirement and pension, and is, therefore, also loathe to quit.

The treatment of toxic nerve deafness is, of course, the removal of the cause. If damage by disease such as mumps or meningitis is sufficiently severe, deafness will be permanent.

Summary

Deafness is a health problem of first magnitude. That which is caused by infections can be very largely prevented by proper treatment of the infections. Sequelae of middle ear infection cannot always be successfully treated; however, much can be accomplished, especially in schools, in determining the presence of the handicap and giving the individual appropriate consideration in class work.

Otosclerosis is an inherited disease of unknown etiology. No cure is known. However, through the fenestration operation many victims can have hearing restored to a practical useful level and can be rehabilitated.

Nerve deafness of the usual type is a difficult problem. Cause and cure are both unknown. For the present, the patient must be satisfied with a hearing aid and lip reading. Occupational and toxic nerve deafness can be largely prevented.

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CLINICAL-PATHOLOGICAL CONFERENCE

INFLUENZAL MENINGITIS

Report of Five Cases

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Dr. A. H. Wells: The remarkable effectiveness of streptomycin, particularly when supported by rabbit antiserum and sulfonamide therapy in the treatment of Hemophilus influenzae meningitis, and the desirability of certain laboratory controls over this therapy, make this a very appropriate and timely subject for our conference. There are five case studies of this disease from our two hospitals to be described.

Case Reports

Dr. S. N. Litman: M.S., a two-year-old white girl, was first seen by me on the day she was admitted to the hospital, December 15, 1946. She had been having a head cold for several days, but she was not considered ill. On the night before admission, she became quite fretful and appeared to be running a fever. She was awakened at 2 A.M. by vomiting. This symptom was repeated several times during the night; and, on the following day when I first saw her, there was an associated fever reaching 105.2° F. She was distinctly listless and somewhat dehydrated. Her breathing was shallow and her pulse rapid. There was no rigidity of the neck or spine, and the cause of the fever was not apparent. She was given Hartman's solution and 5 per cent glucose, cold sponge baths, 10,000 units of penicillin every three hours, and aspirin, grains 2. A flat x-ray plate of the chest revealed slight increased markings consistent with bronchitis. The white blood cell count was 8,600 with 73 per cent neutrophils, 23 per cent lymphocytes, and 3 per cent monocytes. The hemoglobin was 11.1 grams and the red blood cell count 3,800,000. Her temperature fell to 100° F. and ranged up to 101° F., occasionally reaching 102° F. On the second hospital day, she was very listless and ground her teeth continuously. Again there were no positive signs of meningeal infection. However, on the third hospital day (December 17, 1946) there was definite neck rigidity as well as stiffness of the spine. An immediate spinal fluid examination revealed a cell count of 2,111 with 100 per cent neutrophils present, sugar 15 milligrams per cent, protein 55 milligrams per cent, and chlorides 750 milligrams per cent. Many Gram-negative bacilli morphologically and tinctorially typical of H. influenzae were found in the direct smears. Later cultures substantiated the organism identification. Two hundred milligrams of streptomycin were given intrathecally once daily and 225 milligrams were injected every three hours intramuscularly. She was also given 5 grains of sulfadiazine every four hours. The daily spinal taps remained positive for H. influenzae until a culture of the spinal fluid on February 21, 1947, was sterile. A total of 1,400 milligrams of streptomycin were given intrathecally and 12,600 milligrams intramuscularly. It was discontinued on the seventh hospital day. On February 20, 1947, the patient was given 10 c.c. of Hemophilus influenzae type B rabbit antiserum in 100 c.c. of normal saline intravenously. She had a severe chill, and her fever reached 105.2° F. There was also cyanosis for which 0.4 c.c. of adrenalin was given. The 10 c.c. of antiserum was repeated the following day without a reaction. The patient followed a turbulent course from marked stupor to severe restlessness, to a state of extreme negativism. Feeding was very difficult at times. However, the intake of fluids was maintained, and the child was given 250 c.c. of blood. The penicillin therapy was discontinued after four days, and the sulfadiazine was discontinued on February 29. It had reached a level of 10 to 21 milligrams per cent in the blood. Her rather low-grade fever returned to normal on February 20, and remained there. Her recovery was complete, and she had no residual symptoms some months after her illness.

Dr. R. P. Buckley: My first patient, W. M., was admitted to the hospital on June 16, 1946, and expired on June 19, 1946. This five-year-old boy had ridden in a car from Saint Paul to Duluth on the day before admission with his head constantly held out of the car window. He was ill that evening with a frontal headache and a temperature of 102° F. The following morning he had a sudden chill, and his fever reached 106° F. He was delirious and his neck muscles were stiff. He vomited twice and complained of headache over the forehead. The physical examination revealed a rigid neck and back muscles, cervical lymph adenopathy, a few râles in the bases of the lungs, and a positive Kernig's sign. Twenty-five cubic centimeters of spinal fluid were opalescent, and a cell count showed 1,121 neutrophils and 23 lymphocytes. The spinal fluid sugar was 90 milligrams per cent, protein 350 milligrams per cent and chlorides 806 milligrams per cent. A few Gram-negative bacilli were found in direct smears which were later proved culturally to be H. influenzae. He was given 50,000 units of penicillin immediately and 20,000 units every three hours, together with sulfadiazine, grains 15 immediately and grains 7.5 every four hours. As soon as the pleomorphic Gram-negative bacilli were found in the spinal fluid, 25,000 micrograms

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From the Clinical-Pathological Conference of the Duluth Pediatric Society, Dr. E. E. Barrett, president.
Clerical Assistance by Miss Faith A. Gugler.

of streptomycin were given intrathecally and 125,000 micrograms were given every three hours intramuscularly. There followed a convulsion, cyanosis, and a fall in blood pressure to 82/60 following the intrathecal injection. No more streptomycin was available the following day (June 17). The patient was given H. influenzae type B rabbit antiserum in divided doses during this day, and the streptomycin therapy was resumed in the evening. On the third hospital day (June 18), he was given a blood transfusion. The spinal fluid contained H. influenzae, and there were 40 milligrams per cent sulfadiazine present. His temperature was ranging between 100° and 103° F. It fell off to 102° F. on June 19, and his spinal fluid became sterile. However, he expired rather suddenly and unexpectedly. The postmortem examination, performed by Dr. William Knoll, revealed a purulent exudate throughout the meninges and a small amount of clotted blood in the meninges at the base of the brain.

My second patient was not so ill fated. She, K.T., was an eleven-month-old infant who was admitted to St. Mary's Hospital on February 27, 1947, and was discharged on March 23, 1947, in good health. She had become ill on February 23 with a fever, some vomiting, and one loose stool. These symptoms persisted for two days when they disappeared except for some listlessness. On February 26 there was a temperature elevation of 103° F. She took very little liquid food during the day. On February 27 she was admitted to the hospital with a rectal temperature of 107° F., a moderately stiff neck, soft fontanels, rolling eyeballs, extreme dehydration, listlessness, and was obviously acutely and seriously ill. An immediate smear of the spinal fluid revealed typical plemorphic Gram negative bacilli permitting the immediate use of 12,500 micrograms of streptomycin intrathecally and 1 gram every twenty-four hours in divided doses of approximately 125,000 micrograms per dose. The spinal fluid had a white blood cell count of 6,388 with 91 per cent neutrophils and 9 per cent lymphocytes, sugar 15 milligrams per cent, and chlorides 790 milligrams per cent. There was 75 per cent hemoglobin and a white blood cell count of 13,600 with 55 per cent neutrophils, 36 per cent lymphocytes, and 6 per cent monocytes. The infant was also given sulfadiazine, grains 7.5 every eight hours subcutaenously. Daily spinal fluid examinations revealed a rapid disappearance of the organisms and a return of the spinal fluid sugar to normal in six days. The severe fever had subsided on the second hospital day, after which it ranged from 99° to 103° F. for two weeks, following which it fell gradually to normal. The fever and the cell count in the spinal fluid both remained elevated during the administration of the streptomycin. There was, however, a gradual shift of the cells in the spinal fluid from a neutrophil preponderance to ultimately 90 per cent lymphocyte preponderance. The infant was sent home on March 23, almost a month after admission, without residuals.

Case Reports

Dr. R. E. Nutting: My three-and-a-half-year-old girl patient, P.L.P., was admitted to the hospital on November 21, 1946, and discharged as cured on December 18, 1946. She was apparently in good health until three days before admission when she developed a high fever, nausea, vomiting, apathy, and listlessness. On the day before admission her neck became stiff. The physical examination on admission revealed an acutely ill, well-nourished child with a stiff extended neck, who cried out whenever moved. There was opisthotonos, painful flexion of the rigid neck, congested throat, cold sores about the nose, and a painful bilateral positive Kernig's sign. The spinal fluid revealed 8,100 neutrophils and Gram-negative rods which on culture proved to be H. influenzae. There were 12.5 milligrams per cent sugar and 400 milligrams per cent protein in the spinal fluid. The infant was given 200 milligrams of streptomycin intrathecally and 2 grams intramuscularly in eight divided doses. She was also given penicillin, 30,000 units immediately and 20,000 units every three hours, as well as sulfadiazine, grains 20. The streptomycin was given daily intrathecally and intramuscularly until its discontinuance on November 28. The sulfadiazine was discontinued on December 3. The patient suffered from pains in her legs and feet and had a peculiar difficulty in holding her head up. There were shaky, jerky movements of the head which gradually subsided. Her temperature gradually rose during the first five days to 104.5° F. and then subsided during the following five days to 99.5° F. and remained normal after three weeks in the hospital. The spinal fluid became negative for H. influenzae on November 30, when the sugar was 40 milligrams per cent and the protein 45 milligrams per cent. There were no residuals at the time of discharge.

Dr. C. H. Schroeder: My patient, T.A.B., a nine-month-old boy infant, was admitted to St. Luke's Hospital on January 21, 1947, and discharged "well" on February 2, 1947. This infant had been ill for about two weeks before admission. The principal symptoms were nausea and vomiting, associated with cough and rhinopharyngitis. Other children in the family had similar infections. I had seen him once at the residence about a week before admission. He had received some sulfadiazine before admission.

For some days before he came in, the mother had noticed pain and soreness in the muscles of the back and especially of the left shoulder. There also seemed to be pain in the legs, in fact, generalized tenderness on handling.

He was very listless on admission, held his legs flexed and abducted, while his hands clutched his head. The neck and back were extremely rigid and the Kernig strongly positive. The heart and lungs were negative. There was some diffuse tenderness of the abdominal wall but no rigidity. He was immediately placed on penicillin (20,000 units every three hours) and also was given sulfadiazine by mouth.

A lumbar puncture (January 21, 1947) showed a pressure of 270 millimeters of water. Queckenstedt test was negative. The fluid was just noticeably turbid. There were 248 red blood cells, 87 white blood cells, 62 per cent lymphocytes, and 38 per cent neutrophils. Sugar was 97.6 milligrams per cent and the protein 80.4 milligrams per cent. A direct smear revealed numerous Gram-negative bacilli morphologically suggestive of H. influenzae. A culture was made. On January 22, he was given streptomycin intrathecally. The intended dose was 100 milligrams but through error 200 milligrams was given.

That evening the baby seemed a little brighter and was less rigid. Direct typing revealed typical capsular swelling with anti-H. influenzae type B rabbit typing serum. He was given a second intrathecal injection of 100 milligrams streptomycin. He was also given a small dose of influenza virus vaccine intradermally (0.1 c.c.). On January 23, the baby passed a good night and took feedings well. A lumbar puncture that morning showed a less turbid fluid. The pressure was not measured but apparently was lower. The white blood cell count of the spinal fluid was 309; the red blood cell count was 14; chlorides were 700 milligrams per cent. With some misgivings a third dose of streptomycin was given intrathecally. A couple of hours later the baby had a severe and almost fatal reaction. He became unresponsive, and the respirations became very slow and irregular. Oxygen was given and a small dose of coramine was injected subcutaneously. He did not improve and the respirations dropped to 6 or 8 per minute. At 3 P.M. artificial respiration had to be given. At 4 P.M. an attempt was made to pass an intrathecal catheter after a small dose of alpha lobeline was given. We did not succeed in passing the catheter, but the stimulation aroused the baby. He became more conscious, the respirations picked up, and thereafter he steadily improved. After this ordeal, it was noted that his skin presented a blotchy appearance and that a definite exophthalmos was present.

The following day (January 24) he was taking his feedings well and playing with a rattle. Opisthotonus was still marked and a peculiar chorea-like muscular activity was noted. No further intrathecal therapy was given but streptomycin was resumed intramuscularly, alternated with penicillin. This was continued for one week. The temperature became normal on the seventh hospital day, and the baby was discharged on the thirteenth day, perfectly well. To this date (April 5, 1947) he has remained well.

I would like to add that he owes his recovery to the painstaking and persistent efforts of Dr. R. A. MacDonald, intern. I feel that our intrathecal doses were somewhat too large and that the third one should not have been given. On January 24 no organisms were seen. The concentration test revealed 20 milligrams of streptomycin per cubic centimeter of spinal fluid.

Clinical Manifestations

Dr. R. P. Buckley: Influenzal meningitis ranks among the first three causes of suppurative meningitis in children, the other two being meningococcus and pneumococcus meningitis. The clinical manifestations of H. Influenzae meningitis do not differ significantly from the other types of suppurative meningitis, although there may be less evidence pointing to meningeal involvement. There are fulminating cases, fatal within forty-eight to seventy-two hours, and at the other extreme there are infections of very low grade nature lasting for weeks. These are frequently difficult to diagnose because of their incipient nature. The condition is particularly difficult to recognize in infants under seven months since the meningeal signs frequently do not develop in this group until late. The disease tends to be seasonal, occurring in the first half of the winter,[12] mainly during November, December, and January. About 50 per cent of the cases of influenzal meningitis are associated with otitis media, and 10 per cent have an arthritis. Laryngotracheitis, pneumonia, and eighth nerve deafness[8] have also been noted in association with influenzal infections.

Laboratory Aids

Dr. A. H. Wells: Where other facilities are not available, the simple demonstration of a Gram-negative, delicate, small, pleomorphic bacillus is sufficient evidence to start streptomycin therapy. There are, however, additional laboratory procedures which are considered of the utmost importance by the best authorities.

1. The Gram-negative rods must be tinctorially and morphologically distinguished from pneumococcus, meningococcus, and streptococcus since the organism is pleomorphic and frequently occurs as a diplococcus. Good Gram stains are essential.
2. The immediate identification of H. influenzae type B is possible by the capsular swelling test with rabbit anti-influenzal serum mixed directly with the spinal fluid. This Neufeld-quelung reaction is identical with that for pneumococcus typing. Since the great majority of influenzal meningitis is due to type B of Pittman, the test is quite useful. The types A, C, D, E, and F are uncommon and specific antiserum therapy is not so efficacious as that for type B infection.
3. The specific soluble capsular substance can be demonstrated in the spinal fluid at the interface over one cubic centimeter of diagnostic anti-B serum.[1]
4. The organism can be identified as H. influenzae by its growth requirements of hemoglobin.
5. The sensitivity to streptomycin of the strain of organisms isolated can be tested with varying concentrations of the drug, so that the concentration of streptomycin necessary to kill the organism can be determined. This generally runs from 1.2 to 12.5 units per cubic centimeter.
6. The spinal fluid levels of streptomycin during therapy can be determined and should be maintained between 25 and 130 units per cubic centimeter.[4]
7. Similarly the sensitivity of the strain of H. influenzae to sulfonamides, antisera type B, and even penicillin can be determined to advantage. Also, the titers of these antibiotics in blood or spinal fluid can be determined without much difficulty.
8. Blood cultures are positive in approximately 70 per cent of the cases.[14]
9. Daily spinal fluid studies for the organism, chemical analyses, and cellular reactions are considered essential to the proper therapy of this disease, whereas in meningococcic meningitis one spinal tap may prove adequate.
10. Alexander considers the determination of spinal fluid sugar of fundamental importance in the treatment.[2] She feels that this is an indicator of the severity of the infection and gauges the intensity of antiserum and antibiotic therapy by this test.

The daily spinal fluid tests should continue until the cultures are negative for several days and the sugar levels return to normal. One should be alert to the occasional complication of secondary invaders, especially Staphylococcus aureus, in the meninges and blood stream.[14] The intrathecal streptomycin may result in an elevation of cell count and protein possibly as the result of irritation of the meninges due to this drug, and this pleocytosis may persist in spite of the disappearance of the bacteria.

Therapy

Dr. S. N. Litman: It is interesting to review the effectiveness of various forms of therapy of influenzal meningitis advocated during the last decade. Without therapy, H. influenzae meningitis is considered from 92 to 100 per cent fatal in all age groups. Infants and younger children are particularly susceptible to the disease. Anti-influenzal horse serum was thought to reduce the mortality slightly. Alexander's rabbit serum proved to be the first of the more practical forms of therapy in that it reduced the mortality as much as 26 per cent.[14] When the sulfonamides were introduced, there was another efficacious agent which when combined with rabbit antiserum reduced the mortality another 20 per cent.[2,12] There are a few reports of the use of 10 milligrams of heparin intrathecally in cases resistant to therapy, on the theory that the fibrinous exudate may be partially dissolved, permitting entrance of the drugs. With the discovery of streptomycin, it was soon learned that this drug was the most efficacious of any thus far advocated for H. influenzae meningitis, reducing the mortality to approximately 20 per cent. Streptomycin alone in the case of average severity is considered adequate.[1,2] However, in cases of greater severity the therapy should also include rabbit antiserum and sulfadiazine. Some strains of H. influenzae are sensitive to penicillin.[2] However, this antibiotic generally fails and is not to be considered unless the more efficacious forms of therapy are in use. Antiserum alone has been curative in seven out of eight cases.[3]

In the use of streptomycin, it is essential to use large initial doses to avoid producing a drug-resistant strain in an otherwise sensitive strain. An organism inhibited by 3.9 units of streptomycin can suddenly become resistant to 250 units per cubic centimeter if permitted to be exposed to nonlethal doses of the drug. For this reason a repeat of the laboratory test of sensitivity of the organism to streptomycin may be indicated on occasions in a patient not responding properly. Alexander et al[1,2] used approximately 20,000 units per pound for twenty-four hours, given continuously intramuscularly in sodium chloride or interruptedly intermuscularly every three hours at 50,000 units or less per injection. A daily intrathecal dose of 25,000 to 50,000 units is considered necessary. Toxic reactions to streptomycin include erythema, urticaria, augmentation of meningeal signs, persistence of phlebocytosis, local pain in injection, and mild shock on initial administration. As described above, two of our presented cases had rather severe shock reactions from which they recovered.

Summary

We have presented five cases of Hemophilus influenzae meningitis, in four of which there was recovery. In all cases streptomycin and sulfadiazine were used, and in some anti-influenzal type B rabbit serum and penicillin were used. It would seem that we now have a means of combating this disease which not so long ago represented one of the hopeless types of infection.

There is a brief discussion of clinical recognition, laboratory controls, and therapy.

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BABIES POISONED BY WELL WATER

Minnesota physicians are warned of the possibility of poisoning in young infants by nitrates in well water. Two cases of such poisoning have recently been reported to the Department of Health by physicians in western Minnesota.

In one case, a 14-day-old girl died after a two-day illness. The other case was that of a newborn infant who was in good health when discharged from the hospital but became very cyanotic ten days later. The physician stated that the findings in the case indicated a methemoglobinemia possibly due to the nitrate content of the well water used in preparing the baby's food. At the request of the doctor, the Health Department investigated the well and found that the water contained a high concentration of nitrate nitrogen.

The poisoned infants are described as being cyanotic and lethargic, and chemical analysis of their blood showed a markedly increased concentration of methemoglobin. The treatment given was a one-per-cent solution of methylene blue.

Poisoning caused by nitrates in well water seems most likely to occur if the water comes from shallow wells not properly located and constructed and therefore subject to contamination by products of organic decomposition. The Minnesota Department of Health wishes to determine the incidence of nitrate poisoning and the situations in which water of high nitrate content occurs. Any physician having a case in which poisoning from nitrates in well water appears likely may ask for a field investigation by the Health Department.

Case Report

CHRONIC ULCERS OF THE LEG ASSOCIATED WITH CONGENITAL HEMOLYTIC JAUNDICE

H. O. SKINNER, M.D.
Saint Paul, Minnesota

THE occurrence of chronic ulceration of the legs complicating congenital hemolytic jaundice is still of sufficient rarity and interest to justify reporting. Taylor[5] reported, in 1939, the first case of such an ulcer at the Presbyterian Hospital, New York, among forty-three patients suffering from this disease who had been carefully observed for a number of years. Meulengracht, in his careful study of thirty-four cases, makes no mention of it.

A specific relationship between these two conditions has not been generally recognized. Standard medical textbooks and special articles either make very little reference to the ulceration as a possible complication to the hemolytic jaundice or ignore it altogether. Thus Brenizer[1] in a presentation of six cases of the jaundice with a very thorough analysis and discussion of them, says of one of them merely, that the patient "had two ulcers of the left leg that healed after splenectomy."

Gännsslen[2] was one of the first to note this complication and its permanent recovery after splenectomy, although he claimed no priority in this, and most of the cases reported are from German or Scandinavian countries.

Taylor's report[5] gives an excellent summary and he has found reports of "at least seventeen cases" with ulceration.

Since then I have found in the literature only one additional case. This was reported by Lowe[4] who stated that the patient's past history disclosed an ulcer which required three months for healing, before the hemolytic jaundice was recognized. Krueger[3] reported five cases of hemolytic jaundice with no ulcerations but in his comments recognized the rare occurrence of them and their resistance to all treatment until splenectomy is done.

The reasons for accepting a specific relationship rests on three grounds:

1. The ulcers are characteristic. They occur about the malleolar areas. They are usually single, though multiple ulcers are found in cases of long standing. Trauma may or may not be an etiological factor but they begin with a bluish discoloration which breaks down in the center forming eventually an ulcer 3 to 5 cm. in diameter with punched-out but not undermined edges; with a yellowish slough in the center and circumscribed by a zone of bluish cyanosis. There is usually much pain. They are indolent and respond very poorly to all the usual treatments for ulcers.

2. They are not found in other states of severe anemia, secondary or primary, excepting in sickle cell anemia which, incidentally, bears some resemblance to that of hemolytic jaundice.

3. They heal with startling rapidity, and permanently, after the spleen is removed.

Case Report

Mrs. J. W., aged twenty-four, a housewife, was in the third month of her first pregnancy when I first saw her in March, 1944. The diagnosis of congenital hemolytic jaundice was suggested by her pallor and enlarged spleen; confirmed by her blood examination and history; and proved by her very complete recovery after splenectomy.

Family History.—Her mother and one brother have always been anemic. The mother has an enlarged spleen which has never been removed although she has been advised repeatedly to submit to this operation.

Past History.—This is irrelevant except that the patient has always been anemic and her spleen was found to be enlarged when she had pneumonia at the age of twelve. She has had spells of weakness, abdominal pain and slight jaundice which may have been mild attacks of hemoclastic crises. At these times, she thinks she has been helped by liver. Also she has had three bouts with indolent ulcers about her ankles. The first one came in 1937 over the internal malleolus of her left leg, as the result of scratching some mosquito bites. In spite of various treatments and surgical closure, this did not heal for eight months. In 1941 a similar ulcer occurred over the external malleolus of the same leg. This she attributed to the same cause, though similar scratches elsewhere healed without infection. With bed rest, elevation, and hot packs, this ulcer was made to heal in two months. In September, 1943, after a bicycle trip, the old area over the left internal malleolus broke down and a new one appeared over the external malleolus of the other leg. This did not heal for over three months. The patient had been urged frequently to submit to splenectomy but had always refused to do so.

Physical Findings.—These were essentially normal except as follows: The spleen was enlarged and extended 3 inches below the costal arch; it was firm and not tender. The liver was not enlarged. The sclera showed occasionally a slight tinge of yellow. There were scars on both ankles from the ulcers referred to.

Blood Findings.—Wassermann test, negative; Group IV; Rh positive; hemoglobin 9.8 gm.; red blood cells, 2,950,000; white blood cells, 14,800; differential count, polymorphonuclears 68, lymphocytes 20, monocytes 4, eosinophiles 8, microcytosis (spherical type) 4 plus (hyperchromic), polychromatophilia 2 plus, anisocytosis 1 plus.

The fragility test showed increased fragility: hemolysis began below .50 with complete hemolysis at .30; control hemolysis began at .44, with complete hemolysis at .34. Recticulocyte count was 4.1 per cent.

(Continued on Page 663)

Presented before the Southern Minnesota Medical Association, Manakto, Minnesota, September, 1946. Dr. Skinner received the SMMA bronze medal award for this contribution.

History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
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(Continued from May issue)

Luke Miller, who was to become a prominent pioneer physician and citizen in two communities of Fillmore County, Chatfield and Lanesboro, was born at Peterborough, New Hampshire, on August 18, 1815. Presumably his early education was obtained in Peterborough; in 1841 he was graduated from the University of Vermont, at Burlington, and in 1844 he received his medical degree from the Vermont Medical College, at Woodstock, Vermont.

Early displaying political acumen and ability, in the year of his graduation from medical school Dr. Miller was elected to the House of Representative from his native district and, postponing the beginning of his professional career, he served two years in the state legislature. On completion of this term, in 1847, he began the practice of medicine in the county of his birth. After ten years, in which he achieved a reputation as a good physician and surgeon, he moved to the Middle West and in 1857 settled in Chatfield. There, according to Andreas' *Historical Atlas of Minnesota* of 1874, "he soon found himself overrun with business, as a physician and surgeon, and he gave himself up to the demands of his profession," conducting his own practice and co-operating with his fellow physicians, among whom were Dr. Isaac S. Cole, Dr. Refine W. Twitchell, Dr. Nelson W. Allen and Dr. Augustus H. Trow.

Dr. Miller's professional interests extended beyond the actual care of the sick. Soon after his arrival in Chatfield he began lecturing on anatomy, physiology and hygiene to the students at the Chatfield Academy, an excellent institution which had been founded in 1856, and he presumably continued this work until the academy was superseded after a few years by the schools of the state.

In 1862, in Minnesota, the problem of institutional care for the insane first was considered officially, and in 1866, in Governor William R. Marshall's administration, legislation provided for a hospital for insane, which was established that year at St. Peter, at first in temporary, rented buildings. Of the board of trustees of six members, Dr. Luke Miller (listed as of Rushford) was one of the three who were appointed to serve six years. The *Preston Republican* of January 4, 1867, carried the following pertinent item:

> Twenty-one lunatics, ten males and eleven females, passed through Rochester on Thursday of last week, says the *Post,* en route for the temporary State Asylum at St. Peter. They were closely guarded by several officers from this state, Dr. Miller of Chatfield and others, and were being removed from the Iowa State Asylum, where they have been temporarily kept during the last year.

And further, as regards his office as trustee, at the third semi-annual meeting of the Minnesota State Medical Society, held in Minneapolis on June 13 and 14, 1871, "Dr. Luke Miller of Lanesboro extended a cordial invitation to the society to visit the Insane Asylum at St. Peter, on the occasion of the next annual meeting. Accepted."

When the Fillmore County Medical Society was founded in 1866 (sometimes given 1862) "for mutual benefit, and particularly to increase the medical knowledge and skill of the members," Dr. Miller was a charter member and he thereafter was active in the organization. In 1868 his name appeared in the news of the society, to the effect that the president, Dr. R. W. Twitchell, would give an address at the regular annual meeting to be held at Preston on June 8 and that Dr. Luke Miller would give an essay "after the regular business of the society has been attended to." In 1869 he was one of the delegates to the annual meeting of the Minnesota State Medical Society.

Busy as he was professionally, Dr. Miller was not so engrossed that he could not become closely concerned with civic and political affairs. A man of such definite personality and ability could not avoid some degree of enmity, and his changing political affiliations made him a target for acrimonious comment, since, it has been said, he was a Democrat, a Republican, a member of the People's Party, and again a Republican in rapid succession. Shortly after his arrival in Chatfield, he was defeated, on the Democratic ticket, for the office of state senator, and also for membership on the local board of supervisors. In 1858 he was elected a trustee of the school board of Chatfield, to serve one term, and later, from 1860 to 1861 and from 1864 to 1867, inclusive, he again held the office. In the meantime, in 1860, he once more knew defeat, on the Republican ticket, in the village as candidate for the office of justice of the peace and in the state as senator. In 1861, however, still a Republican, he was elected state senator and so well did he fill the office that he was returned on three successive elections.

In the early period of the Civil War Dr. Miller's declaration that he was in favor of fighting until every Negro should be free, even if all whites were annihilated, drew down on his head the expressed wrath of the *Chatfield Democrat* (issue of September 21, 1861). During the war Dr. Miller served as medical examiner for the draft board. The *Preston Republican* of September 12, 1862, carried the following item:

> Exemption: Dr. Miller, surgeon for the county, finished his labors Tuesday of last week and left the remainder of the applicants in the hands of Dr. Lafayette Redmon. We understand that a good many persons of foreign birth are still coming forward to make oath to the effect that they have never declared their intention of becoming citizens of the United States. No examinations to date.

Later he was appointed state agent to care for sick and wounded soldiers, a duty that he performed skillfully and kindly. In the issue of the *Republican* for June 17, 1864, it was stated that Dr. Miller was going south to visit the sick and wounded soldiers from Minnesota, and in August, 1864, there appeared further comment: Dr. Miller had been appointed by the Governor to go on this visit, he had had access to military hospitals, and had brought back with him, for the information and comfort of the soldiers' families, lists of the men he had seen.

With other public-spirited citizens of Fillmore County, Dr. Miller was influential in the building of the Root River and Southern Minnesota Railroad (later called the "Southern Minnesota"), between La Crosse, Wisconsin, and St. Peter, Minnesota, originally planned to run through Chatfield, and for three years he held the office of treasurer and vice president of the road. Although the railway company first was incorporated in 1855, the work of construction proceeded slowly. In the chapter devoted to railroads in the History of Fillmore County of 1882 appears the sentence: "As to the last land grant from Congress in 1866, without which the road could not or would not have been extended west of Houston, perhaps the most credit should be given to Charles D. Sherwood, Dr. Luke Miller, C. G. Wykoff, and D. B. Sprague, who joined their fortunes with the enterprise at the reorganization in 1865. The village of Lanesboro, which originated in consequence of this railroad, was platted in 1868."

The founding of Lanesboro, a railroad enterprise of which Col. Thomas R. Brayton was agent, about forty miles west of the Mississippi River, perhaps represented a new challenge to Dr. Miller, for he moved to that village in 1869 and thereafter devoted himself to promoting the welfare and prosperity of the community. It seems probable, however, that his long-continued interest in the railroad, the fact that he was still serving as one of its officers, and his disappointment that Chatfield did not realize its hopes from the road, took him to Lanesboro. Possibly it was in anticipation of this change that Dr. Miller, in 1867 or earlier, established an office in Rushford (ten miles northeast of Lanesboro), which, until 1869, was the western terminus of the railroad; his name appears in the *Minnesota Railroad and River* Guide for 1867-1868, in the portion devoted to physicians of Rushford: "Luke Miller, South Side." Apparently a man of some substance financially, Dr. Miller was cashier of the Chatfield bank in the early sixties and was rated by a commercial agency, in 1872, as a good risk (the possessor of $20,000 or more). In fact, a distinguished resident of the county, who was a young man when Dr. Miller was at the height of his career, has recalled that "Dr. Miller was doubtless a good physician and he certainly was a capable financier; in those times if one had a little money and knew how to handle it he could get along. The rate of interest then was 3 per cent a month." And the doctor knew how to handle his money, if the experience of a certain pioneer settler, a Maine Yankee, was typical, for this man once borrowed $100 from Dr. Miller and, it has been said, "it cost him a yoke of steers and forty acres of good timber land before he got rid of the debt."

After his removal to Lanesboro Dr. Miller continued his activities for nearly twelve years. From time to time, in various connections, civic, social, political and professional, his name appeared in the newspapers and an occasional item has been preserved in histories of Fillmore County, as thus: "In August, 1877, Dr. D. F. Powell [he who was called by the Indians 'White Beaver'] was bitten by a rattlesnake at the Big Spring, two miles from Lanesboro. On his return, Dr. Luke Miller prescribed the formula which has kept in fashion so long as a panacea in such cases, R. spiritus frumenti, ad lib., and the doctor recovered." Notes are found that at one time Dr. Miller served as village constable; as postmaster; as treasurer of the local order of Odd Fellows; that on the organization of the Old Settlers of the Southern Tier of Counties of the State of Minnesota, on October 21, 1878, he served on the program committee.

When Dr. Miller arrived in Chatfield in 1857, he was accompanied by his wife, Abbie D. Miller, of his own age, a native of Vermont, and their two children, Luke L. and Jennie A., both of whom were born in Vermont. Although Dr. Miller's year of birth has come down in various accounts as 1815, a census of 1857-1860, taken at Chatfield, listed both him and Mrs. Miller as forty-seven years old; the son Luke was eight years old and Jennie was four. Luke L. Miller, for many years, throughout his adult life, was a resident of Chatfield. Jennie A. Miller became the wife of Professor Gorman of St. Cloud.

Dr. Miller died in Lanesboro on July 12, 1881, and was buried with Masonic rites and honors. There follows an excerpt from an obituary included in the *History of Fillmore County* of 1882:

> His final earthly home was at Lanesboro, but he belonged quite as much perhaps in Chatfield or in New Hampshire, the scene of his early triumphs, and in the county and state which he loved and served so well. He was an upright man, an officer above corruption and of good business qualities; and as a skilled surgeon and physician he had a wide reputation.

Russell Lucretius Moore was a native of northeastern Ohio, born at Montville, Geauga County, on December 31, 1843. When he was nine years old his parents moved with him to Michigan and soon after to Grant County, Wisconsin. In the graded schools of this community he completed his early education before entering the Platteville (Wisconsin) Academy. At the opening of the Civil War he enlisted in the Seventh Wisconsin Volunteer Regiment of Infantry, which was part of the well-known Iron Brigade of the Army of the Potomac, and served with it four years, until after the end of the war. He achieved the rank of adjutant. At the Battle of Spotsylvania Court House, on May 12, 1864, he received wounds that incapacitated him and confined him to a hospital in Philadelphia for four months.

On receiving his final discharge from the army, Russell Moore returned to Platteville and there began the study of medicine under the preceptorship of George W. Eastman, M.D., in preparation for entering Rush Medical College in Chicago. During this period, on October 7, 1867, he was married to Elizabeth Howdle; in 1869, immediately after receiving his degree from Rush, Dr. Moore brought his wife to the village of Forestville, in the township of that name in Fillmore County, where he began his professional life. His card appeared regularly in *Western Progress,* the newspaper of Spring Valley, and in the *Preston Republican.* In 1869 also, on June 23, Dr. Moore joined the Masonic Blue Lodge of Preston; he formerly had belonged to the Masons of Plattevile. In February, 1871, he settled in Spring Valley and by December 25, 1872, his card announced him as physician, surgeon and obstetrician, "office and residence in brown house, Griswold's Addition, north of the depot."

It has been stressed that pioneer physicians, at all hours and in all seasons, faced the hazards of poor roads. Dr. Moore was one who sustained a serious accident in the course of a professional drive at midnight in June of 1870. On the narrow road that rounded the bluff just west of Forestville he met a team that crowded him off the edge so that he, his horses and vehicle rolled over and over down to the bottom of a steep incline, a distance of about twenty-five feet, all three receiving considerable damage. "Dr. Redmon" said the describing reporter "is attending his professional brother and says it will be some weeks before he will be able to resume practice."

Dr. Moore, from all records, was a well-trained, intelligent, conscientious physician who served his community in various professional capacities and who gave his patients the best medical and surgical treatment available and sought for better. That he was sued, in 1881, for malpractice, through malice, apparently, did him no great harm and it was announced pointedly, editorially in the *National Republican* of Preston in the following summer, that Dr. R. L. Moore of Spring Valley would not move to another field of usefulness as rumor had reported; that his practice was large and increasing; and that uterine surgery was one of his specialties in which he was well posted and reliable.

From January 6, 1870, to March 26, 1872, Dr. Moore was county coroner. He early became a member of the Fillmore County Medical Society (organized in 1866) and was its president when, in 1879, the group suspended activity, the officers holding over; in a record of 1882 Dr. Moore was mentioned as the last president of the society. It is interesting that in October, 1882, he called a meeting for the purpose of reviving the organization.

Soon after he arrived in Minnesota, Dr. Moore became a member of the Minnesota State Medical Society and the record of his work with the organization from 1870 to 1889, inclusive, is to his credit. He attended meetings regularly and he held office: for several terms, beginning in 1878, as corresponding secretary, and, in 1883, as third vice president; in this year also he was one of the delegates to the annual meeting of the American Medical Association. He served on many different committees, on some of them more than once: ethics, gynecology, medical education, practical medicine, obstetrics, surgery, the use and abuse of alcohol, diseases of the nervous system, diseases of children, epidemics, membership, orthopedic surgery, nominations for chairmen of sections, and medical jurisprudence (its chairman). The reports that he sent in reply to questionnaires from committees of the state society on the treatment of specified diseases or surgical conditions were concise and sound; and the occasional letters asking for advice and help that he wrote to men of special experience and knowledge were intelligent and modest. One worthy of note is that written in April, 1883, to A. Blitz, M.D., of Minneapolis, chairman of the Committee on Ophthalmology, for it concerns a field in which Dr. Moore had increasing interest:

> In response to your circular I have the pleasure to say that as a country surgeon and physician I am quite often called to treat diseases of the eye. During the year last past I have not seen a single case of ophthalmia neo-natorum. I have seen a few cases in my field in other years past. It certainly is of rare occurrence in this locality. I look upon it as an aggravated form of purulent conjunctivitis. Am I right? I see a considerable number of catarrhal, purulent and granular conjunctivitis (trachoma). Next in frequency is iritis, and phlegu-tenular conjunctivitis. Keratitis is seen almost as frequently as the last two. I try to make a correct diagnosis of each case as it presents itself. I try to treat each case properly. I try to *see* more than simply "sore eyes," for which the same unvarying nitrate of silver "eye water" is given, as is the manner of some "medicine men." What do you think of the treatment of some of these diseases by the "dry method?" I have found it of great benefit. A powder something like the following I have found very useful: Iodoform: Hydrang. chlor. Nietis; Sach Alba . . . equal parts. (Formula as printed in Transactions.)
>
> Triturate long and well in a wedgewood mortar. Sift a little into the eye off a camel's hair brush two or three times a day. Perhaps you will smile at my idea of these things. I am aware that many specialists have a thought that the general practitioner knows but little or nothing of the diseases which fall into his special line, but from sheer necessity the said general man of all work, the "country doctor," often treats some of these cases with as fine results as are ever achieved by the specialist. In all our small towns and villages there are always people who cannot afford to go from home to consult gentlemen of your class. These people some of us *must* treat. We wish to do it well. Give us all the light you can upon these common diseases of the eye in your forthcoming report.

An ardent advocate of measures promoting sanitation and public health, Dr. Moore co-operated actively and faithfully with the State Board of Health, as a private physician and, in the middle eighties, as local health officer. It speaks well for him and for his townsmen that they gave him willing support in this work. Excerpts from his reports on diphtheria were used in the notes on medical history in Fillmore County which preceded the present series of biographical sketches.

In 1883, after the "Diploma Law" to regulate medical practice in the state was passed, Dr. Moore received license No. 149 (R) on October 13 and filed it in the county on October 19.

Not by inclination a politician, but evidently willing to serve the state as well as the community, Dr. Moore was a candidate for the state legislature, according to a county history, in 1875 and 1878. On a Republican ticket in a Democratic district, it was not surprising that he was defeated both times, first by a Democrat and next by a Greenbacker, and that he thereupon decided that he had had enough of politics.

After practicing in Spring Valley for twenty-nine years, in 1889 Dr. Moore moved to Lincoln, Nebraska; in the early or the middle nineties he returned, however, to devote the remainder of his active life to specialization in diseases of the eye and ear. He died in Spring Valley on August 13, 1902; his wife's death had occurred earlier; there were no children.

J. J. Morey (sometimes Morrey), an eclectic practitioner, is known to have been in Fillmore County from the late sixties into the early seventies, and it is likely that he practiced in the county over a longer period, beginning perhaps in the fifties.

In 1869, when eclecticism became established in Minnesota (the Minnesota State Eclectic Medical Society was organized on May 26; the Southern Minnesota Eclectic Medical Society on November 14), a small group of Fillmore County practitioners organized the Fillmore County Eclectic Medical Society, as has been described, and of this group J. J. Morey (Morrey) was a member and an officer. If Dr. Morey was a resident of Preston in 1869, he soon moved to Spring Valley where, early in 1870, he had become established in association with Dr. M. G. Pingree, with offices in the Rogers Drug Store. The partnership was short-lived, for in August, 1870, J. J. Morey, physician and surgeon, had settled in Etna, a village in the southeastern corner of Bloomfield Township, which adjoins Spring Valley Township on the south. Dr. Morey was still practicing in Etna in the spring of 1871.

W. (?) Morrison, an herb doctor, was early in Chatfield and vicinity, part of the time on a near-by farm south of town, part of the time, in the eighties, a resident of the village, in the "Durgan-Halloran" house. He is remembered as a contemporary of Dr. Augustus H. Trow ("Old Doc Trow"), who was in Chatfield from 1856 to 1887, inclusive. It is said that sometimes the two men were called on cases together, and that occasionally Dr. Morrison was summoned in the absence of Dr. Trow. One venerable citizen has recollected in detail the treatment, as it appeared to him, administered to him by Dr. Morrison for lung fever; namely, the giving of herb medicine "to draw the poison out of the lungs to the legs," and the care of the supposedly resultant lesions of those members by washing with more herb medicine; also of his curing Bright's disease when the patient, a young girl, had been given up by other physicians. Other senior residents of the village, however, have recalled Dr. Morrison with faint praise; "but none of them (medical practitioners) knew much in those days."

That for many years, however, this practitioner played a part in the life of the community, as a "doctor" and as a participant in civic affairs, notably at the proceeding at town meetings, is unquestioned. There is still quoted with delight his retort to the village atheist, at an important civic gathering at which the location of the new Elmira town hall was to be decided. This atheist had been contending belligerently that the hall must be placed within the borders of the village of Chatfield rather than a mile or more north of the settlement as some of the Elmira farmers wished, and he declared loudly into Dr. Morrison's somewhat deaf ears his intention of leaving the community forever unless the new hall were placed according to his desire. Dr. Morrison inquired gently, "*Where* will you be going, sir?" which to his hearers savored of subtle humor as referring to destination in the hereafter.

On February 26, 1886, there died in Elmira Township, Olmsted County, in which part of the village of Chatfield lies, William Morrison, "doctor," married, native of New Hampshire, at the age of seventy-eight years.

In a business directory of 1896-1897 a Dr. W. A. Morrison was listed as in Chatfield. It appears likely that this entry referred to Dr. W. S. Morrison, of Fremont, Winona County, some fifteen miles to the northwest of Chatfield, who over a period of years maintained an office in Chatfield and practiced in the village two days a week, driving back and forth between the two towns.

(Because of his practice in Fillmore County and because through an apparent inadvertence, only a few lines about Dr. William Shaw Morrison appeared in the notes on medical history in Winona County that were published in MINNESOTA MEDICINE *in 1940, a brief sketch of this interesting and well-qualified physician follows.)*

William Shaw Morrison, although usually remembered as a pioneer physician of Winona County, where the greater part of his life was spent, is claimed by Fillmore County also as a practicing physician of the early days. So large and so far distant did his following become in Fillmore County that he found it well, as has been stated, because those were literally horse and buggy days, to maintain offices in Chatfield, a village of both Fillmore and Olmsted Counties.

William S. Morrison was born in Waddington, New York, in 1840, the son of The Reverend and Mrs. John Dow Morrison, both of whom were natives of Keith, Scotland; John Dow Morrison came to this country in 1838 to become pastor of the United Presbyterian Church of Waddington. There were three other children in the family: John, who became a physician of Winnipeg, Canada; James Dow, doctor of divinity and doctor of laws, Bishop of the Protestant Episcopal Church, with residence at Ogdensburg, New York; and Maria Jane, a teacher of piano in Waddington.

William Morrison received his early education in the schools of Waddington and later attended Huntington Academy, in Canada. His formal medical training he obtained at McGill University, Montreal, from which he was graduated in 1865. In the following two years he served an internship at the Montreal Hospital and began his practice of medicine in Waddington.

Some years previous to his graduation in medicine, a group of his father's parishioners had gone into the Middle West, to settle at Fremont, Winona County, Minnesota, and in 1867, when the community was in need of a physician, Dr. Morrison at the urging of these old friends joined the community, to devote his care and skill to them and to the settlers of a widespread surrounding territory. He drove from Waddington, New York, to a port on Lake Michigan, where he embarked for Milwaukee, Wisconsin, shipping his Morgan mare on the boat; from Milwaukee he drove to Fremont over almost impassable roads.

In 1884 Dr. Morrison opened an office in the village of Lewiston, Winona County, a few miles north of Fremont, and it is remembered well by residents of

Chatfield, that over a considerable period in the eighties and nineties he had an office in that village and observed there a regular consulting schedule two days a week. But whatever the conditions of his medical practice, he always resided at his farm home a mile from Fremont. After the enactment of the "Diploma Law" of 1883 he practiced under an exemption certificate and was listed in the official register of physicians of the state as a member of the regular school of medicine.

Among the physicians of a later generation who remember Dr. Morrison well are Dr. Conrad A. Neumann, of Winona, and Dr. George B. Eusterman, of Rochester, both of whom were residents of Lewiston when Dr. Morrison was in his prime. Dr. Eusterman has described Dr. Morrison as a dark-complexioned, short, stocky man; energetic, vigorous to the point of being athletic; of fine personal and professional appearance; of a genuine, cordial kindness that won him friends and kept them; a man who during his sixty years of service to his neighbors and friends became a vital factor in the well-being and growth of his community.

In 1869 William S. Morrison was married to Margaret Ferguson of Fremont; Mrs. Morrison died in 1909. Of the marriage there were eight children, six boys and two girls. Two of the sons died in early childhood. When Dr. Morrison's death occurred in July, 1928, there were six living children: John, of Witoka; Kenneth Reid, of Minneapolis; James Dow, of Winona; William Shaw, of Evanston, Illinois, and Maria Morrison Henry and Harriet Morrison, both of Fremont; and one brother, The Right Reverend James Dow Morrison, of Ogdensburg, New York. In 1943 all of this group were living except Bishop Morrison, who had died in January, 1934.

William Shaw Morrison died at the age of eighty-eight years, after a life filled with service; although age forced him to retire from active practice a few years before his death, up to his last year many of his old patients still came to his home for advice and medical attention. Dr. Morrison was a life-long member of the Masonic Lodge of Lewiston. He was buried from the Scotch Presbyterian Church of Fremont with Masonic rites at the grave. The whole community mourned the passing of an able physician whose professional activities had spanned the years from 1867 to 1928.

(To be continued in the July issue)

President's Letter

THE ANNUAL MEETING

The acquisition of knowledge is accomplished only by great labor. It must be sought before it can be acquired and only individuals who are willing to exercise sufficient effort to gain knowledge can become the authors of new ideas. Often such ideas or discoveries possess an importance which it is impossible to exaggerate. However, unless and until such ideas are accepted and such discoveries are adopted, they can exercise small influence and can accomplish little benefit. Believing in this doctrine, the physicians of Minnesota hold a scientific meeting each year. This great traditional assemblage brings together the physicians of Minnesota and other states in order that they may continue their efforts to advance medical knowledge and medical science. Opportunity is provided for discussion which may eventuate in solution of certain of the perplexing problems of organized medicine and possibly in a more capable medical profession.

A high ideal has been maintained by the Committee on Scientific Assembly. An earnest attempt has been made to provide a program which will prove attractive and beneficial to members of the Association and its guests. The scientific program includes papers and lectures of superlative quality on important, vibrant topics. Those who will participate in the program are members of our own Association and well-known authorities from other states.

In addition to the general assembly, special sectional meetings will be held on the morning of each of the three convention days and on Monday and Tuesday afternoons. On Monday morning the Minnesota Academy of Ophthalmology and Otolaryngology is sponsoring a program, and in the afternoon there will be a special symposium on rheumatic fever. Tuesday morning features discussions on the subject of orthopedic surgery, and the American College of Chest Physicians meets on Tuesday afternoon. A special symposium on research problems is scheduled for Wednesday morning.

A program of demonstrations has been arranged for each intermission and immediately preceding and following each scientific session. These include gross pathologic specimens, presented by the Minnesota Society of Clinical Pathologists; roentgenologic diagnosis and interpretation by members of the Minnesota Radiological Society; obstetric manikin demonstrations, and, in addition, a demonstration on Rh blood-testing procedures and blood-compatibility testing in connection with one of the scientific exhibits. Other scientific exhibits will be provided by Association committees, hospitals, societies and governmental departments. These exhibits will provide information on the various services available and the progress which is being made.

Round-table luncheons have always provided an excellent opportunity for an exchange of ideas and opinions. This year they will occupy a prominent place in the program of the second and third days of the meeting.

The commercial exhibits will attract and deserve your attention; well-informed representatives will be present to discuss with physicians the latest developments in their particular fields.

Wednesday afternoon has been set aside for consideration of the problem of medical service in rural areas. Members of allied health organizations, social welfare workers, school authorities, representatives of farm, professional, and civic groups have been invited to this part of the meeting, and we hope that they as well as others interested in this problem will attend this informative portion of the program.

In these confusing years there is great need for the sort of opportunity which this annual meeting affords. As usual, the meeting will mark the climax of another year's work. Those who participate in the program have worked diligently and will present their reports, hoping that they may provide information which will be of assistance to other members of the profession. Every member of the Association is urged to participate in the deliberations of the meeting. Only by discussion can our experience be interpreted properly and a wide understanding of its application be attained.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

STATE MEETING

As a state medical association we are acquiring age and dignity. This year's meeting in Duluth will be the ninety-fourth annual get-together, and according to the advance registrations will be a large gathering. The program which has been mailed to each member and which also appears in this issue speaks for itself.

The annual meeting of our state medical association serves as a real stimulus to the members of the profession of the state, not only to those who listen but perhaps more to those who present the scientific program. The meeting also affords an opportunity for everyone to talk shop in off hours, to meet others with common interests and to renew acquaintanceships. The out-of-state speakers who are recognized in their special fields serve to prevent too much provincialism in our scientific thought. That the medical profession appreciates the value of our annual meeting is shown by the yearly attendance.

Our Duluth hosts have arranged an informal entertainment for members and their wives for Monday night. The annual banquet Tuesday night will be addressed by Mr. Tom Collins of Kansas City, who has a reputation as an eminent speaker on public affairs, and by Dr. Louis A. Buie, president of our association.

Remember the date—Monday, June 30.

MINNESOTA MEDICAL SERVICE, INC.

Over $85,000 has been paid to Minnesota Medical Service, Inc. This is a sufficient amount to develop and carry on the Medical Service Program.

The Board of Directors decided at the last meeting held May 27, 1947, that no further contribution will be accepted after July 1, 1947, and that all members of the Minnesota State Medical Association who have not sent in their check by that date are honorably relieved of remitting their pledge.

Minnesota Medical Service, Inc., will have a booth at the state meeting in Duluth where all information can be obtained. Acceptance agreements will be available whereby physicians agree to provide medical service according to contract.

A complete report of the progress of Minnesota Medical Service, Inc., will be given on Sunday, June 29, at the meeting of the House of Delegates.

THE BELL LECTURESHIP AND THE MINNEAPOLIS X-RAY SURVEY

The Bell lecture by Dr. Herman E. Hilleboe was the opening gun which started the Minneapolis community-wide chest x-ray survey. Our lecturer was a distinguished Minnesotan who received his common school and medical education and much of his training in tuberculosis while in this state. That he came back to his home state to launch the first community-wide chest x-ray survey in any large city in the country, was especially appropriate. But the greatest import of the occasion was that from his comprehensive knowledge of the tuberculosis problem he was enabled to give unexcelled guidance to us, and to all who contemplate mass attacks against chest diseases.

He also brilliantly represented one of the chief participants in the Minneapolis survey, the United States Public Health Service. He was for some years the Director of Tuberculosis Services of this bureau, and is now the Assistant Surgeon General and Associate Chief of the Bureau.

Dr. Hilleboe's discussion of recent evaluations of the accuracy of roentgenographic diagnosis of chest plates will startle most doctors. It is evident from this study that chest films, both large and small, are after all only a part of the process of complete chest and heart diagnosis. One might best consider the filming process with the small film to be only a crude first sifting process. Only through this medium, however, can we separate from the general population that small percentage of individuals upon whom it is feasible to con-

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Dr. Hilleboe's address, entitled "Community-Wide Chest X-Ray Surveys and the General Practitioner," appears in this issue.

centrate our clinical and laboratory efforts, including the use of larger x-ray film.

In a recent editorial on chest surveys in this Journal, there was a timely admonition that many cases in this smaller group will have healed tuberculosis and should not be subjected to active treatment. It might well have been said also that until the true seriousness of the lesion has been proven, intelligent and gentle handling of such apprehensive patients should be the aim of all of us. It is equally true that earliest diagnosis of lung tumors and early appraisal of activity and contagiousness of active tuberculosis cases, followed by active treatment and isolation, are of tremendous importance, both to the patient and to the public at large.

Dr. Hilleboe has attempted to answer one of the problems most disturbing to us who planned the Minneapolis survey, and that is the probability of swamping our excellent and up-to-this-time adequate county sanatorium facilities. Some of his suggestions as to selection of patients for sanatorium care have been planned and adopted by E. S. Mariette, Superintendent of Glen Lake Sanatorium. Increase of facilities, medical service, and nursing personnel await more adequate financing by the governmental units involved, and, at best, will not be available when first needed.

In view of the inability of the sanatorium to carry on its customary study of x-ray positive cases, much of this follow-up work will have to be done by the medical profession and outpatient clinics. Even many active cases will have to be treated by home care and home isolation until sanatorium shortages can be corrected.

Dr. Hilleboe has stressed the importance of tuberculin testing, sputum and gastric washing cultures of those who show lesions on the large film, suggesting active tuberculosis.

The Medical Technical Committee of the survey, in close co-operation with Dr. Hilbert Mark of the State Board of Health, Dr. Frank Hill, City Health Commissioner, and Dr. E. S. Mariette, Superintendent of Glen Lake Sanatorium, have planned for increased laboratory facilities to provide smears and cultures of sputum and gastric washings. Limited facilities for overnight hospitalization and gastric lavage at Glen Lake Sanatorium are offered by its management. All arrangements for gastric washings by the doctors of private patients can also be made by calling the City Health Department tuberculosis control office.

The committee appeals to the profession for co-operation in reporting their findings and diagnoses, not only in tuberculous cases as required by law, but in all chest and heart lesions. These statistics will be of important scientific medical interest only if most reports are received.

The success of any chest survey depends to a great extent upon the percentage of the population that responds to the appeal to have a chest x-ray. The intelligent use of the latest laboratory procedures for diagnosis and determination of activity is also of great importance. However, most of us realize that gentleness, ability, and persistence of the doctor in handling patients, plus his clinical skill in interpreting symptoms, physical findings, and laboratory procedures, and, most of all, his diagnostic ability, are still the most important part of any x-ray chest survey. One could only wish that all of us might be possessed to some degree at least of these excellent qualities that were so often exhibited by our great teachers and physicians of the past generation—which qualities were so truly exemplified by Dr. J. W. Bell, in whose honor Dr. Hilleboe presented his momentous address.

Charles E. Merkert, M.D.
Chairman, Medical Technical Committee,
Minneapolis Chest X-ray Survey

RESEARCH PROFESSORSHIP IN RHEUMATIC FEVER

The American Legion of the State of Minnesota is embarking on a campaign which it has termed the "Minnesota Project." According to this plan, it is proposed to give aid to those who study heart disease and rheumatic fever of children.

A committee of prominent legionnaires has met with the dean of the medical school and the president of the University of Minnesota. Together they have formulated plans to establish at the University of Minnesota, a professional chair, the occupant of which will direct research in heart disease and rheumatic fever of children. To maintain this chair in perpetuity, as a memorial to veterans of World Wars I and II, the committee expects to secure a half million dollars from members of the American Legion of the State of Minnesota.

This undertaking deserves the support of the Minnesota State Medical Association. Every physician, with the knowledge which he possesses concerning rheumatic fever and its relationship to heart disease, can offer his services to Legion posts and can assist in stimulating the interest of legionnaires and other citizens in his community.

L.A.B.

MEDICAL ETHICS IN VETERANS PROGRAM

INSTANCES of unethical or questionable practices by physicians have recently come to light in connection with the Minnesota Veterans Medical Service program. These practices were the subject of discussion at a meeting May 14 of the Operating Committee of the Veterans Medical Service Division of the Minnesota State Medical Association.

Inasmuch as the veterans medical service program was inaugurated in this state to provide veterans with the same high quality medical care that private patients receive, it is indeed unfortunate when veterans are over-treated or carelessly treated. This practice of over-treating is making neurotics out of many veterans.

Cases have been found by the Committee where certain doctors have reported and claimed payment for medical care never rendered and have falsified records to show nonservice-connected disabilities as being service-connected.

The procedure of the Operating Committee in each instance of a breach or suspected breach of ethics is first of all to notify the physician by letter in order to give him a chance to clear himself. If this warning is ignored, the Committee then refers the case to the Councilor in the doctor's particular district. The Operating Committee has been given unlimited policing power by the Council of the State Medical Association.

The Committee recommends that doctors in treating veterans should conduct themselves at all times so that they will not in any way lay themselves open to criticism later. Reports submitted should always be complete, accurate and truthful. Upon this good faith depends the success of the entire program.

Honesty is one of the most important qualities of human character, and is an essential in a member of the medical profession. A strange quirk in human make-up lies in the fact that a man who is quite honest in other human relations will be as crooked as a dog's hind leg in dealing with his government. Honesty is a quality which is not limited in its application.

It is our humble opinion that medicine, and organized medicine in particular, has no place for crooks. In the interest of maintaining the fair name of our organization, members who are guilty of these dishonest practices as disclosed by our Operating Committee should be deprived of membership in their county societies.

CHRONIC ULCERS OF THE LEG

(Continued from Page 651)

This constituted a typical picture of congenital hemolytic jaundice.

Possibly pregnancy in such a case also is rare; at least I could find nothing on this subject in the medical literature. Apparently there is nothing more to be done than to be prepared for a hemoclastic crisis and remember that these patients do not take kindly to transfusions of whole blood. Accordingly, I carried this patient on expectantly, giving first the liver which she had been taking with no obvious benefit, and then stopping it, with no untoward results, but continuing the routine calcium and the vitamins. The pregnancy was uneventful.

Labor occurred on the two hundred and eighty-fifth day and was normal. There was no crisis or other complication and only a moderate perineal laceration, which healed without difficulty. The patient went home on the tenth day. She led a very active life with varying icterus but her red cell count continued under three million and her hemoglobin ran about 8 gm.

About March 1, 1945, she developed another ulcer, this time over the right external malleolus, from causes unknown. She treated it herself for three weeks before calling on me. By then the ulcer was 2 cm. in diameter, was punched out but the edges were not elevated or undermined. There was a yellowish gray base and a purplish surrounding areola. There was little discharge and little pain. My treatment was no more successful than that of my predecessors but I was more successful than they in persuading her to have the spleen removed.

This was done on May 11, 1945. The spleen was found to weigh 900 gm. Surgical recovery was excellent and the patient went home on the ninth day.

The response of the blood picture and ulcer was spectacular. From the day before the operation to that of her discharge, nine days later, the red blood cells jumped from 2,950,000 to 3,990,000, and the hemoglobin from 7.9 gm. to 12.7 gm. The ulcer, covered only with vasoline, took on a healthy appearance at once, was nearly healed at the end of her hospital stay and the last scab dropped off in less than a month.

The patient has enjoyed exuberant health ever since then, has had another baby (born August 26, 1946) and has had no trouble of any kind at the site of her ulcers.

Conclusions

Chronic ulcerations about the malleoli seem to bear a specific relationship to chronic hemolytic jaundice and are healed very rapidly and permanently by splenectomy.

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

COUNCIL APPROVES ADDITIONAL ORTHOPEDIC CLINICS

In order to provide more adequately for the 1,800 rural Minnesota indigent poliomyelitis patients who are known to need follow-up care, it has been found necessary to set up more orthopedic clinics in the state.

Dr. Edwin J. Simons, chief of the medical service unit of the Division of Social Welfare, has appeared before the Council of the Minnesota State Medical Association and has received its approval for holding four additional orthopedic clinics each spring and fall and permission to ask patients to come to the centers for follow-up examinations when necessary.

All of these clinics are held only with the approval of the local medical society of the particular district, and only those patients are seen at the clinic who are referred by their family physicians.

In a survey made some time ago, Dr. Simons reported, it was found that one out of 138 patients was able to pay. The Social Welfare division investigates each case, and those that are able to pay in whole or in part for their care, are asked to do so.

Physicians Request Clinics

In asking approval for the additional clinics, Dr. Simons said that physicians of the state in the different districts have asked for these clinics and the approval of the medical societies concerned will be secured before the clinics are held. Reporting plans for these additional clinics, Dr. Simons said that it is very desirable to have a clinic at Virginia because of the considerable number of polio cases on the Range; one at Faribault is in prospect in order to have some disposition in the southern part of the state. It is also expected to hold one in Cambridge and one in Thief River Falls, Dr. Simons said.

The Sister Kenny method has prolonged the follow-up care of polio patients, Dr. Simons reported; where patients used to go to the hospitals during the entire period until they were discharged some months later, he said, they are now kept under physiotherapy for months and years, and the hospital costs are much higher.

In Dr. Simons' opinion, it is necessary to establish these additional clinics to solve this problem. Dr. Simons assures the medical profession that the work is being done in each instance for the improvement of medical practice. It is impossible to get enough physiotherapists, he says; therefore, it is necessary to ask patients to come to the centers. This involves less expense and less trouble; the National Foundation for Infantile Paralysis will help cover the cost.

COUNTY SOCIETY OFFICERS PLAN NATIONAL CONFERENCE

In an effort to make the American Medical Association the working partner of every individual physician, the AMA is planning a National Conference of County Medical Society Officers, to be held Sunday, June 8, at 2:30 p.m., in Hotel Traymore, Atlantic City, just prior to the opening of the AMA Centennial Convention.

Dr. B. O. Mork, Jr., of Worthington, secretary of the Southwestern Minnesota Medical Society, is a member of a special committee which was appointed to arrange for the conference.

This is the first conference of this type ever attempted, and it is hoped that a permanent organization may grow out of it, an organization through which it will be possible for all members of the medical profession to work more easily together in solving common problems and which will bring the AMA closer to every member.

It has been decided that this first conference should concentrate on local problems, that it should last three hours and that, insofar as possible, everyone present should have opportunity to find out just what goes on and how the facilities of medical organization—national, state and local—may be made available to the individual doctor.

Question and Answer Plan

The committee hit upon the workshop question and answer conference as the most effective type of program. According to preliminary plans, here is how the program has been set up:

On stage will be a panel of twelve persons familiar with subjects under consideration, to answer questions. Also available will be the officers and heads of the AMA's various departments. Questions will come from the floor in regard to any subject having to do with medical organization problems. All questions must be written and may be submitted before or during the meeting. Members of the committee will process the questions, and the moderator will designate the person or persons who can throw light upon the particular subject under discussion. To allow for discussion on a variety of subjects and answers on as many questions as possible, each speaker will be limited to three minutes for discussing the question put to him.

Suggested topics for discussion are professional relations, which includes such problems as the functions and duties of county society officers, hospital staff problems and the doctor in relation to specialty boards, postgraduate education and legislation; medical service, including prepayment plans, rural health, labor union programs, et cetera, and public relations, including relations between the doctor and the individual patient and the doctor and the general public.

PERSONAL DEBTS PERIL PATIENTS' BUDGETS

American consumers are going into debt twice as fast as in any other period in history, according to a recent bulletin from the Institute of Life Insurance. Goods are being bought on credit at an all-time record rate.

This is perhaps only natural, the bulletin notes, since people have waited a long time to buy some of the items that are just beginning to come back on the market since the end of the war.

However natural the trend is, it is well worth taking note of it. For the extent of the increased use of credit raises the question of whether some people may not be undermining their own well-being and financial security by going into debt too heavily in relation to their prospective income. It also points to the fact that budgets and paying abilities of each individual doctor's patients are being STRETCHED TO THE BREAKING POINT!

Total Debt Nears 1929 Peak

At the end of 1946, the total personal debt in this country had reached an estimated high of 39.6 billion. That is only 1.1 billion from the peak of 40.7 billion in 1929, just before the crash came.

That means that this country is nearing a dangerous breaking point, that the time has come for caution in not extending credit too freely and not letting accounts slide. Laxity now in making collections may mean a loss of a good share of income. Physicians everywhere would do well to watch this trend closely for their own protection.

$3,000,000 MAYO MEMORIAL VIRTUALLY ASSURED

If Minnesota residents will subscribe a final $350,000 needed toward a total of $3,000,000, the construction of an outstanding medical center at the University of Minnesota, dedicated to the memory of the late Drs. Will and Charles Mayo, will be assured.

Recent action by the State Legislature in granting an appropriation of $750,000 practically assures the fact that a Mayo Memorial research center will materialize. Funds already raised include $750,000 granted by the 1945 Legislature and $1,162,000 subscribed by more than 3,000 corporations and individuals.

Plans for the memorial provide for a central 19-story tower unit. The building will be connected with the medical sciences building by a four-story extension, which will house the Mayo Memorial auditorium, with a seating capacity of six hundred.

The main building will also be connected with the students' health service, the outpatient department and Elliot and Todd sections of the hospital.

To Contain School of Public Health

According to an announcement by the Committee of Founders, the Mayo Memorial will contain the school of public health and the medical library, and enough hospital beds to help lighten the load on University Hospitals and to contribute to research and training.

The Committee of Founders, authorized by resolution of the 1943 Legislature, includes the following: James F. Bell, Earle Brown, Walter Burdick, Mrs. George Chase Christian, Frank T. Heffelfinger, Jay C. Hormel, Raymond J. Julkowski, George W. Lawson, Ward Lucas, Leo D. Madden, Archbishop John Gregory Murray, Charles N. Orr, I. A. O'Shaughnessy, Mrs. Mabeth Hurd Paige, Dr. Edward L. Tuohy, Dr. Donald J. Cowling, chairman, and Dr. George Earl, secretary.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. Dubois, M.D., Secretary

LICENSE OF MINNEAPOLIS PHYSICIAN REVOKED FOLLOWING PLEA OF GUILTY TO MANSLAUGHTER CHARGE

Re State of Minnesota vs. Harry Gilbert, M.D.

On April 23, 1947, Harry Gilbert, M.D., forty-nine years of age, with offices at 547 Medical Arts Bldg., Minneapolis, entered a plea of guilty in the District Court of Hennepin County to an information charging him with the crime of manslaughter in the first degree. Dr. Gilbert was arrested on March 14, 1947, following the death of a twenty-two-year-old unmarried Minneapolis girl at a Minneapolis hospital. Dr. Gilbert had performed a criminal abortion on the decedent on March 4, 1947, for which he was paid the sum of $300. The abortion was performed by the use of a catheter. The patient became critically ill but was not removed to a hospital until March 12, at which time the defendant had the patient admitted as a patient of his brother, Dr. Maurice Gilbert, 330 W. Broadway, Minneapolis. Neither the hospital nor the legal authorities were notified by the defendant or his brother. However, on the date of the decedent's death the Minneapolis Police Department was notified of the facts and the body was removed from a Minneapolis mortuary to the Hennepin County morgue where a postmortem examination disclosed the true facts. Dr. Harry Gilbert was immediately arrested and signed a confession admitting the abortion on the decedent, and also admitting that he had performed numerous other criminal abortions.

The Hon. Levi M. Hall, Judge of the District Court, ordered the defendant to surrender his basic science certificate to the Basic Science Board for cancellation and his medical license to the State Board of Medical Examiners for permanent revocation. Dr. Gilbert surrendered both documents in open court, with a signed authorization for their cancellation and revocation, respectively, endorsed on the back of each instrument. Thereupon, Judge Hall sentenced the defendant to a term of not to exceed five years at hard labor in the State Prison, stayed the sentence and placed the defendant on probation for the same length of time. Judge Hall warned the defendant that notwithstanding the punishment of the permanent loss of his medical license and basic science certificate, that if there was any further violation of the laws of this State, the Court would make a further order revoking the stay of sentence and committing the defendant to the State Prison.

At the regular meeting of the Minnesota State Board of Medical Examiners held on May 16, 1947, Dr. Gilbert's medical license was formally revoked. Dr. Gilbert's basic science certificate has been delivered to the Basic Science Board for cancellation by that Board.

MANKATO DENTIST AND ACCOMPLICE PLEAD GUILTY TO ABORTION CHARGE

Re State of Minnesota vs. W. A. Groebner

Re State of Minnesota vs. Raymond E. Older

On May 24, 1947, Dr. Willard A. Groebner, twenty-four years of age, licensed to practice dentistry in the State of Minnesota, entered a plea of guilty in the District Court of Blue Earth County, Minnesota, to an information charging him with the crime of abortion. Groebner, who maintained a dental office in the City of Mankato, was arrested on March 25, 1947, on a complaint issued in the Municipal Court of Mankato, charging him with the crime of abortion. The complaint charged Groebner with performing a criminal abortion on a twenty-four-year-old unmarried Fairmont girl on March 21, 1947. The patient died three days later after the attempted abortion. Groebner was arraigned in the Municipal Court at Mankato on March 27, 1947, at which time he demanded a preliminary hearing and was released on $1500 bond. The preliminary hearing was continued to await a report from pathologists at the University of Minnesota. The report showed the cause of death to be "acute endometritis and hemorrhagic pneumonia due to an attempted induced abortion." On May 2, 1947, Groebner waived his preliminary hearing and was held to the District Court where he was arraigned on May 13 at which time he entered a plea of not guilty and the case was set for trial. However, on May 24, Groebner withdrew his plea of not guilty and entered a plea of guilty to an information charging him with the crime of abortion. Groebner was sentenced by the Hon. Harry A. Johnson, Judge of the District Court, to a term of not to exceed four years in the State Reformatory at St. Cloud, which sentence was suspended upon several conditions, one of which forbids Groebner to practice dentistry either in Mankato or North Mankato.

The Minnesota State Board of Dental Examiners has announced that proceedings are being instituted to require the defendant to show cause why his dental license should not be revoked. Groebner graduated from the School of Dentistry at the University of Minnesota, in 1944, and was licensed to practice the same year.

On June 2, 1947, Raymond E. Older, thirty-nine years of age, Granada, Minnesota, was sentenced by Judge Harry A. Johnson to a term of not to exceed three years in the State Reformatory, which sentence was suspended and the defendant placed on probation. Older had entered a plea of guilty on May 19, 1947, to an information charging him with the crime of abortion in the same case involving Groebner. Older admitted to the Court that he made the arrangements with Groebner for the criminal abortion and paid Groebner the sum of $75.00. The patient became unconscious in Groebner's dental office and was removed by Older to a filling station at Granada where she was kept over night. The following day she was taken to a hospital at Fairmont where she died the next evening.

MINNESOTA STATE MEDICAL ASSOCIATION

Ninety-Fourth Annual Session

Duluth Armory, Duluth, Minnesota
June 30, July 1 and 2, 1947

ANNOUNCEMENTS

Sectional Program—This year's program is again divided into two sections to be conducted simultaneously in the St. Louis and Duluth Rooms, respectively. The St. Louis Room, where the general scientific assembly will convene each day, is located on the second floor of the Armory, and the Duluth Room, where special sectional meetings will be held, is off the main arena.

Scientific Cinema—Scientific motion pictures will be shown in the East arena before each morning and afternoon session, at the conclusion of the Monday and Tuesday sessions, and at each intermission. Provided by the courtesy of the Medical Film Guild, these films, developed under the guidance of outstanding authorities associated with medical schools or national medical societies, are authentic scientific reports on research which has been conducted for many years.

Luncheons—Twenty Round Table Discussion Luncheons have been arranged for Tuesday and Wednesday, July 1 and 2, at the Duluth, Spalding and Holland Hotels. Tickets must be purchased in advance. Lists of subjects and discussion leaders are printed in the programs, and reservation cards are being mailed out with the program. Attendance at each luncheon is limited to thirty; late comers are accommodated according to their choice if limits have not already been reached. Tickets are $1.50.

Annual Banquet—The annual dinner for members, guests and wives, will be held at Hotel Duluth, Tuesday evening, July 1, at 7 p.m. Mr. Tom Collins, prominent Kansas City businessman and eminent speaker on public affairs, and Louis A. Buie, Rochester, President of the Minnesota State Medical Association, are speakers. Tickets are $3.00.

"Variety Night"—All convention visitors and their wives will be guests of the State Association and the St. Louis County Medical Society at an informal party, 7:30 p.m., Monday, June 30, Hotel Duluth. There will be special music, entertainment and refreshments.

Guest Speakers—We are indebted to the following organizations for guest speakers at this meeting:

The Minnesota Society of Clinical Pathologists is inaugurating the *Arthur H. Sanford Lectureship in Pathology* at this year's meeting, to become a feature of all future annual meetings. Speaker, Elexious T. Bell, Professor of Pathology, University of Minnesota.

The Northern Minnesota Medical Association—Speaker, Robert E. Gross, who is Wm. E. Ladd Professor of Children's Surgery, Harvard Medical School and Surgeon in Chief, Children's Hospital, Boston.

The Minnesota Radiological Society—Speaker, Marcy L. Sussman, Director, Department of Roentgen Diagnosis, Mount Sinai Hospital, New York City, who will deliver the annual *Russell D. Carman Memorial Lecture in Radiology.*

The Northwestern Pediatrics Society—Speaker, Benjamin Spock, Section on Pediatrics, Mayo Clinic, Rochester.

The Minnesota Academy of Ophthalmology and Otolaryngology—Speakers, George E. Shambaugh, Jr., Assistant Professor of Otolaryngology, Northwestern University, Chicago; and Frederick A. Davis, Chairman, Department of Ophthalmology, University of Wisconsin, Madison.

The American College of Chest Physicians—Speaker, William Roemmich, S. A. Surgeon, United States Public Health Service, acting Tuberculosis Control Officer, Minneapolis Health Department.

The National Foundation for Infantile Paralysis, Inc.—Speaker, Joseph G. Molner, Medical Consultant, National Foundation for Infantile Paralysis, Wayne University, Detroit.

The Minnesota Department of Health—Obstetric Manikin Demonstrations by Willis E. Brown, Associate Professor of Obstetrics and Gynecology, University of Iowa Medical School, Iowa City; Ralph E. Campbell, Associate Professor of Obstetrics and Gynecology, University of Wisconsin Medical School, Madison; and Mancel T. Mitchell, Clinical Assistant Professor, Obstetrics and Gynecology, University of Minnesota Medical School.

Other visiting speakers at this meeting:

Benedict F. Massell, Associate Research Director, House of Good Samaritan, Boston.

Haven Emerson, School of Public Health, Columbia University, New York.

Roy H. Turner, Professor of Medicine, Tulane University, New Orleans, and Chairman, Committee on Diseases of the Liver, National Research Council.

Mrs. Charles W. Sewell, Administrative Director, American Farm Women's Division, American Farm Bureau Federation, Chicago.

Dean F. Smiley and Fred V. Hein, Ph.D., Consultants in Health and Physical Fitness, Bureau of Health Education, American Medical Association, Chicago.

Hiram E. Essex, Ph.D., and Alfonso Graña, Mayo Clinic, Rochester.

Medical Women's Luncheon—The American Medical Women's Association, Minnesota Branch, will hold a luncheon meeting at the Kitchi Gammi Club, Duluth, Monday, June 30, at 12:15 p.m. All women physicians are invited. Make reservations in advance through Marie K. Bepko, Cloquet, Minnesota.

Nu Sigma Nu Get-Together—On Monday, June 30, at 5:30 p.m. there will be a reunion of members of the Nu Sigma Nu fraternity at the Duluth Athletic Club for cocktails, dinner and a social evening. Notify Charles N. Hensel, 613 Lowry Medical Arts Building, St. Paul, if you plan to attend.

Minnesota Academy of Ophthalmology and Otolaryngology Luncheon—The Academy is holding a luncheon meeting at 12:30 p.m. Monday, June 30, at The Flame. Make reservations in advance through Archie Olson, 815 Medical Arts Building, Duluth.

American College of Chest Physicians Luncheon—Tuesday, July 1, at 12:30 p.m. chest physicians will hold a luncheon meeting in the Tally-ho Room, Hotel Holland. Reservations should be made with G. A. Hedberg, Nopeming Sanatorium, Nopeming.

Minnesota Surgical Society Luncheon—At 12:30 p.m. Tuesday, July 1, the Minnesota Surgical Society is having a luncheon meeting at The Flame. All members may attend if they make reservations in advance through M. G. Gillespie, 205 W. Second Street, Duluth.

Medical Veterans Meeting—All doctors who served in World War II are invited to a luncheon meeting at 12:30 p.m. Monday, June 30, in the Tally-ho Room of the Holland Hotel, sponsored by the Society of Medical Veterans in Duluth. Purpose of the meeting is to give returned medical officers opportunity to offer constructive criticism as to the way medical departments of the army and navy were administered during the war. It is hoped to prepare definite suggestions or recommendations for better utilization of medical resources in this country in the event of another national emergency.

Medal—The Southern Minnesota Medical Association will present its annual medal for the best scientific exhibit presented by an individual physician at this meeting. Presentation will be made at the banquet Tuesday evening, July 1, Hotel Duluth.

Fifty Club—This year's candidates for election to Minnesota's "Fifty Club" will be honor guests of the Association at the banquet. Presentation of lapel buttons and certificates to candidates who have practiced medicine for fifty years in Minnesota will be a feature of the banquet program.

Technical Exhibits—One of the largest technical exhibits in the history of the Minnesota State Medical Association meetings will be on display in the Armory Arena at Duluth. This exhibit plays an important part in the interest and value of every state meeting. Also, the revenue from sale of exhibit space makes possible the high quality of scientific program and events which characterizes our Minnesota meetings. Every convention visitor should make a special point of visiting the technical exhibits.

Woman's Auxiliary—Wives of physicians attending the meeting may secure programs of the business and social sessions of the Woman's Auxiliary at the Women's Registration Desk in the lobby of the Hotel Duluth. All visiting women are cordially invited to attend the special events arranged by hostesses of the St. Louis County Medical Auxiliary. Among these is a tea Monday, 3 p.m., at the home of Mrs. Anthony J. Bianco. The Annual Meeting and Luncheon to be held Tuesday, July 1, at Hotel Duluth are open to all Auxiliary members. Out-of-town members will be guests of the St. Louis County Medical Auxiliary at a Round-up Breakfast to be held Wednesday, July 2, at 10 a.m. at Hotel Duluth.

Golf—The annual Golf Tournament of the Minnesota State Medical Association will be held Sunday, June 29, at 1 p.m. at the Northland Country Club. All medical golfers are invited to enter competition for the attractive prizes that have been donated. Advance registration must be made through R. L. Nelson, Duluth.

Fishing—Deep sea fishing excursions along the North Shore of beautiful Lake Superior are being arranged by Karl E. Johnson, Duluth. All that is needed is appropriate fishing togs, no equipment or license necessary. Price is $3.00 per person for a party of four or more. Reservations must be made in advance.

SPECIAL SESSIONS

In addition to the general sessions to be held on Monday, Tuesday and Wednesday in the St. Louis Room of the Armory, there will be five special sessions in the *Duluth Room.* These will be held during the morning of each of the three convention days and Monday and Tuesday afternoons, with a special conference on Rural Health on Wednesday afternoon in the St. Louis Room. Special sessions are open to all convention visitors. Details are given in the program listings.

Monday, June 30

9 a.m.—Minnesota Academy of Ophthalmology and Otolaryngology

2 p.m.—Symposium on Rheumatic Fever

Tuesday, July 1

9 a.m.—Special program on Orthopedic and Fracture Surgery

2 p.m.—American College of Chest Physicians

Wednesday, July 2

9 a.m.—Symposium on Research Problems

2 p.m.—"Rural Health—A Joint Responsibility," a special conference on the timely subject of rural health concludes the convention program. Nationally known authorities will discuss various phases of the local and national problem. Invited are members of allied health organizations, social welfare workers, school authorities and representatives from various farm, professional and civic groups.

DEMONSTRATIONS

A program of demonstrations has been arranged for each intermission period and immediately preceding and following each general session on Monday, Tuesday and Wednesday, and to be held in Rooms D-1, D-2, D-3 and D-4 in the Armory Arena. A series of five *obstetric manikin demonstrations* will be held this year, arranged by the Committee on Maternal Health and sponsored by the Minnesota Department of Health. Three of these will be given in the Armory; two will be given at Hotel Duluth.

D-1 *Obstetric Manikin Demonstration*
1 p.m. and 5 p.m. Monday, June 30, by Willis E. Brown, Associate Professor of Obstetrics and Gynecology, University of Iowa.
5 p.m. Tuesday, July 1, Ralph E. Campbell, Associate Professor of Obstetrics and Gynecology, University of Wisconsin.

D-2 *"Rh Blood Testing Procedures and Blood Compatibility Testing,"* given by D. R. Mathieson, daily, 8:30 and 10:15 a.m. and 3:15 and 5 p.m., sponsored by the Mayo Foundation and Mayo Clinic in connection with an extensive scientific exhibit, details of which are listed under Scientific Exhibits.

D-3 *X-Ray Diagnosis and Interpretation*
Sponsored by the Minnesota Radiological Society, daily at 8:30 and 10:15 a.m. and 3:15 and 5 p.m.

D-4 *Gross Pathological Specimens*
Sponsored by the Minnesota Society of Clinical Pathologists, to be held before each scientific session, at intermission periods and at the close of Monday and Tuesday sessions.

In addition, on Tuesday, July 1, Dr. Campbell will give an obstetric manikin demonstration at 12:15 p.m. in the Arrowhead Room, Hotel Duluth; and on Wednesday, July 2, Mancel T. Mitchell, Clinical Assistant Professor of Obstetrics and Gynecology, University of Minnesota, will give an obstetric demonstration at 12:15 p.m. in the Arrowhead Room, Hotel Duluth.

SCIENTIFIC PROGRAM

Monday, June 30

SECTION I—GENERAL SESSION

A.M.
8:00 Scientific Cinema .... East Arena
Visit Scientific and Technical Exhibits .... Mezzanine Arena
8:30 Demonstrations—Rooms D-2, D-3 and D-4

9:00 *Hypertension* .... St. Louis Room
Classification of Hypertension—Howard Kaliher, Pelican Rapids
Medical Treatment—William D. Coventry, Duluth
Surgical Treatment—Harold F. Buchstein, Minneapolis

10:15 *Intermission*

Scientific Cinema .... East Arena
Visit Scientific and Technical Exhibits .... Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

11:00 *Management of Heart Disease* .... St. Louis Room
Treatment of Congestive Heart Failure—Ben Sommers, St. Paul
Diagnosis and Treatment of Cardiac Emergencies—Wilburn O. B. Nelson, Fergus Falls
Recent Advances in the Treatment of Cardiovascular Diseases—Charles Naumann McCloud, Jr., St. Paul

11:30 *Surgery for Congenital Cardiovascular Diseases*—Robert E. Gross, Chief of Surgery, Children's Hospital, and Wm. E. Ladd Professor of Children's Surgery, Harvard Medical School, Boston

P.M. *Afternoon*

1:00 Scientific Cinema .... East Arena
Visit Scientific and Technical Exhibits .... Mezzanine Arena
Obstetric Manikin Demonstration—Room D-1
Willis E. Brown, Associate Professor of Obstetrics and Gynecology, University of Iowa, Iowa City

2:00 *Gastrointestinal Ulcerative Disease* .... St. Louis Room
Medical Therapy in Ulcerative Colitis—Paul G. Boman, Duluth
Medical Therapy in Peptic Ulcer—J. Allen Wilson, St. Paul
Vagotomy in Peptic Ulcer—Waltman Walters, Rochester

2:45 *Fenestration Operation for Otosclerosis*—George E. Shambaugh, Jr., Assistant Professor of Otolaryngology, Northwestern University, Chicago

3:15 *Intermission*

Scientific Cinema....................East Arena
Visit Scientific and Technical Exhibits....................Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

4:00 *Russell D. Carman Memorial Lecture*....................St. Louis Room
A Physiologic Approach to Cardiovascular Roentgenology—Marcy L. Sussman, Director, Department of Roentgen Diagnosis, Mount Sinai Hospital, New York City
Presentation of Speaker by Robert E. Fricke, Rochester, President, Minnesota Radiological Society

5:00 Scientific Cinema....................East Arena
Visit Scientific and Technical Exhibits....................Mezzanine Arena
Demonstrations—Rooms D-1, D-2, D-3 and D-4

7:30 "Variety Night"....................Ballroom, Hotel Duluth
All convention visitors and wives will be guests of the Minnesota State Medical Association and the St. Louis County Medical Society for an evening of music and special entertainment, Monday, at 7:30 p.m. Refreshments will be served throughout the evening in the Arrowhead Room. Everybody is invited.

Monday, June 30

Section II—Special Session

A.M.

9:00 *Minnesota Academy of Ophthalmology and Otolaryngology*....................Duluth Room
Case Reports—Frank N. Knapp, David L. Tilderquist, Alvin G. Athens and Orien B. Patch, Duluth

10:15 *Intermission*

Scientific Cinema....................East Arena
Visit Scientific and Technical Exhibits....................Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

11:00 *Minnesota Academy of Ophthalmology and Otolaryngology,* Continued. Duluth Room
The Incision and Closure of the Wound in Cataract Extraction—Frederick A. Davis, Chairman, Department of Ophthalmology, University of Wisconsin, Madison

P.M. *Afternoon*

1:00 Scientific Cinema....................East Arena
Visit Scientific and Technical Exhibits....................Mezzanine Arena
Obstetric Manikin Demonstration—Room D-1
Willis E. Brown, Associate Professor of Obstetrics and Gynecology, University of Iowa, Iowa City

2:00 *Symposium on Rheumatic Fever*....................Duluth Room
Paul F. Dwan, Minneapolis, Chairman
Genesis of Rheumatic Fever—Wesley W. Spink, University of Minnesota, Minneapolis
Diagnosis of Rheumatic Fever—Morse J. Shapiro, Minneapolis

3:15 *Intermission*

Scientific Cinema....................East Arena
Visit Scientific and Technical Exhibits....................Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

4:00 *Symposium on Rheumatic Fever,* (Continued)....................Duluth Room
Management of Rheumatic Fever and Rheumatic Heart Disease—Benedict F. Massell, Associate Research Director, House of Good Samaritan, Boston

Discussion Period

5:00 Scientific Cinema....................East Arena
Visit Scientific and Technical Exhibits....................Mezzanine Arena
Demonstrations—Rooms D-1, D-2, D-3 and D-4

7:30 "Variety Night"....................Ballroom, Hotel Duluth
(Listed under Section I, General Session)

Tuesday, July 1

Section I—General Session

A.M.

8:00 Scientific Cinema....East Arena
Visit Scientific and Technical Exhibits....Mezzanine Arena

8:30 Demonstrations—Rooms D-2, D-3 and D-4

11:00 *Obstetrics in General Practice*....St. Louis Room
Prolonged Labor with Special Reference to Postpartum Hemorrhage—Alexander M. Watson, Royalton
Management of Obstetric Emergencies—Frederick L. Schade, Worthington
General Problem of Anesthesia in Obstetrics—Edward B. Tuohy, Rochester

P.M.

12:15 *Round Table Luncheons*
(Listed under Section II, Special Session)

Afternoon

1:00 Scientific Cinema....East Arena
Visit Scientific and Technical Exhibits....Mezzanine Arena

2:00 *New Trends in Infant Care*—Benjamin Spock, Rochester....St. Louis Room
Presentation of Speaker by Irvine McQuarrie, Minneapolis, representing the Northwestern Pediatrics Society

3:00 *Fifteen-minute discussion period*

3:15 *Intermission*
Scientific Cinema....East Arena
Visit Scientific and Technical Exhibits....Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

4:00 *Arthur H. Sanford Lectureship in Pathology*....St. Louis Room
Pathology of Diabetes Mellitus—Elexious T. Bell, Professor of Pathology, University of Minnesota, Minneapolis
Dedication of Lectureship and Presentation of Speaker by Kano Ikeda, St. Paul, President, Minnesota Society of Clinical Pathologists

5:00 Scientific Cinema....East Arena
Visit Scientific and Technical Exhibits....Mezzanine Arena
Demonstrations—Rooms D-1, D-2, D-3 and D-4

7:00 *Annual Banquet*....Hotel Duluth
(Listed under Section II, Special Session)

Tuesday, July 1

Section II—Special Session

A.M.

9:00 *Orthopedic and Fracture Surgery*....Duluth Room
Edward T. Evans, Minneapolis, Chairman
Congenital Dislocation of the Hip Before Walking Begins—Vernon L. Hart, Minneapolis
Treatment of Fractures of the Patella, S. Sverre Houkom, Duluth

10:15 *Intermission*
Scientific Cinema....East Arena
Visit Scientific and Technical Exhibits....Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

11:00 *Orthopedic and Fracture Surgery* (Continued)....Duluth Room
Recurrent Dislocations of the Shoulder—Edward H. Juers, Red Wing
Differential Diagnosis of Painful Feet—Mark B. Coventry, Rochester

P.M.

12:15 *Round Table Luncheons*
Obstetric Manikin Demonstration—Ralph E. Campbell, Associate Professor, Obstetrics and Gynecology, University of Wisconsin, Madison
Newer Drugs and Therapeutic Methods—Raymond N. Bieter, University of Minnesota
Common Foot Ailments—Edward T. Evans, Minneapolis
Trends in Pediatric Practice—Frank G. Hedenstrom, St. Paul
Management of Sinusitis—Jerome A. Hilger, St. Paul
Parenteral Fluids—John J. Boehrer, Jr., Minneapolis
Urological Procedures in General Practice—Waldo N. Graves, Duluth
Use of Digitalis and Quinidine—Ben Sommers, St. Paul
Dermatology in General Practice—Frederick T. Becker, Duluth
Diabetes—Archibald E. Cardle, Minneapolis

2:00 *American College of Chest Physicians*.......Duluth Room
J. Arthur Myers, Minneapolis, Chairman
Follow-up Diagnostic Procedures of Roentgen Lesions Found by Survey Methods—William Roemmich, S. A. Surgeon, United States Public Health Service, Acting Tuberculosis Control Officer, Minneapolis Health Department
Discussion by Dr. Myers
More Common Intrathoracic Tumors—Thomas J. Kinsella, Minneapolis

3:15 *Intermission*

Scientific Cinema.......East Arena
Visit Scientific and Technical Exhibits.......Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

4:00 *American College of Chest Physicians* (Continued).......Duluth Room
Roentgenologic Diagnosis of Early Carcinoma of the Lung—Leo G. Rigler, University of Minnesota, Minneapolis
Discussion by Sumner S. Cohen, Glen Lake Sanatorium, Oak Terrace
Streptomycin in the Treatment of Tuberculosis—Karl H. Pfuetze, Cannon Falls
Discussion by G. Arvid Hedberg, Nopeming, and Dexter Lufkin, Veterans Hospital, Minneapolis

5:00 Scientific Cinema.......East Arena
Visit Scientific and Technical Exhibits.......Mezzanine Arena
Demonstrations—Rooms D-1, D-2, D-3 and D-4

7:00 *Annual Banquet*.......Hotel Duluth
Presiding: Daniel W. Wheeler, Duluth, President, St. Louis County Medical Society
Introduction of Mrs. John A. Thabes, Sr., Brainerd, President, Woman's Auxiliary
Presentation of Fifty Club Certificates
Presentation of Southern Minnesota Medical Association Medal
Presentation of Distinguished Service Medal
President's Address: "For Manners Are Not Idle"—Louis A. Buie, Rochester, President, Minnesota State Medical Association
Address: "Price Tags on Progress"—Mr. Tom Collins, Kansas City, Missouri

Wednesday, July 2

SECTION I—GENERAL SESSION

A.M.

8:00 Scientific Cinema.......East Arena
Visit Scientific and Technical Exhibits.......Mezzanine Arena

8:30 Demonstrations—Rooms D-2, D-3 and D-4

9:00 *Chemotherapy of Venereal Disease*.......St. Louis Room
Treatment of Gonorrhea—Walter E. Hatch, Duluth
Treatment of Syphilis—Paul A. O'Leary, Rochester

9:45 *Serum Hepatitis*—Roy H. Turner, Professor of Medicine, Tulane University, New Orleans, and Chairman, Committee on Diseases of the Liver, National Research Council

10:15 *Intermission*

Scientific Cinema.......East Arena
Visit Scientific and Technical Exhibits.......Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

11:00 *Management of Poliomyelitis*.......St. Louis Room
Epidemiology and Recent Developments—Joseph G. Molner, Medical Consultant, National Foundation for Infantile Paralysis, Inc., Wayne University, Detroit
Treatment of the Sick Child—Erling S. Platou, Minneapolis
Treatment of the Paralysis—Miland E. Knapp, Minneapolis

P.M.

12:15 *Round Table Luncheons*
(Listed under Section II, Special Session)

Afternoon

1:00 Scientific Cinema.......East Arena
Visit Scientific and Technical Exhibits.......Mezzanine Arena

2:00 *Rural Health—A Joint Responsibility*.......St. Louis Room
Louis A. Buie, Rochester, Chairman
The Plan of Action for Farm Communities—Mrs. Charles W. Sewell, Administrative Director, American Farm Women's Division, American Farm Bureau Federation, Chicago
A Sound Public Health Program—Haven Emerson, School of Public Health, Columbia University, New York City
The Health Program in Rural Schools—Dean F. Smiley, Consultant in Health and Physical Fitness, Bureau of Health Education, American Medical Association, Chicago
Physical Education in Rural Schools—Fred V. Hein, Ph.D., Consultant in Health and Physical Fitness, Bureau of Health Education, American Medical Association, Chicago
Hospital Facilities for All—Viktor O. Wilson, Director, Minnesota Hospital Survey and Planning Program, Director, Division of Hospital Services, Minnesota Department of Health
Medical Services—Frank J. Hirschboeck, Duluth

Wednesday, July 2

SECTION II—SPECIAL SESSION

A.M.

9:00 *Symposium on Research Problems*.......Duluth Room
James T. Priestley, Rochester, Chairman
Intravenous Protein Therapy—Arnold J. Kremen, University of Minnesota
Evaluation of the Short Proximal Loop in Gastric Resection—Fred Kolouch, Jr., University of Minnesota
Drainage of Liver and Thoracic Duct Lymph—John H. Grindlay, Rochester
Experimental Study of Lymph from Liver and Thoracic Duct—James C. Cain, Rochester
Idiopathic Degeneration of the Meningeal Dura, A New Pathological Entity—Arthur H. Wells, Duluth

(A five-minute discussion period will follow each talk)

10:15 *Intermission*

Scientific Cinema.......East Arena
Visit Scientific and Technical Exhibits.......Mezzanine Arena
Demonstrations—Rooms D-2, D-3 and D-4

11:00 *Symposium on Research Problems* (Continued).......Duluth Room
The Mechanism of Transient Leukopenia: A Motion Picture—Hiram E. Essex, Ph.D., and Alfonso Graña, Rochester
The Rôle of Chronic Portal Thrombosis in Splenic Anemia—Mavis P. Kelsey, Rochester
Hemolytic and Non-hemolytic Transfusion Reactions—Edmund B. Flink, University of Minnesota
The Present Status of the Relation of Cholesterol to Arteriosclerosis—E. Russell Hayes, University of Minnesota

(A five-minute discussion period will follow each talk)

P.M.

12:15 *Round Table Luncheons*

Obstetric Manikin Demonstration—Mancel T. Mitchell, Minneapolis
Meningitis and Its Treatment—Erling S. Platou, Minneapolis
The Anemias—Walter S. Neff, Virginia
Management of Hepatic Disease—Roy H. Turner, Professor of Medicine, Tulane University, New Orleans
Pelvic Pain—Anatomic and Physiologic Aspects—Philip N. Bray, Duluth
Chemotherapy in Wound Management—David P. Anderson, Jr., Austin
Diagnosis of Obscure Fevers in General Practice—Daniel W. Wheeler, Duluth
Management of Patients with Chronic Headaches—Bayard T. Horton, Rochester
Office Practice in Ano-rectal Diseases—William C. Bernstein, St. Paul
Dermatology and Syphilology—Paul A. O'Leary, Rochester

SCIENTIFIC EXHIBITS

S-9 *American College of Physicians and Surgeons*

S-15 *Committee on Rural Medical Service*

S-17 *Committee on Tuberculosis*

S-6 *"Dangerous Drugs"*
Minnesota State Pharmaceutical Association

S-7 *"Health Education"*
Minnesota Public Health Association

S-5 *"Here's That Nurse"*
Minnesota Nurses Association

S-16 *"Hospital Services"*
Minnesota Department of Health

S-3 *Insurance Liaison Committee*

S-12 *"Macular Diseases"*
Minnesota Society for the Prevention of Blindness
University of Minnesota Department of Ophthalmology

D-2 *Mayo Foundation for Medical Education and Research and the Mayo Clinic*
(1) "Partial and Total Loss of the Nose, Plastic Reconstruction"
G. B. New and J. B. Erich
(2) "Congenital Anomalies of the Heart and Great Vessels, Clinicopathologic Study of 115 Cases"
T. J. Dry, J. E. Edwards, R. L. Parker, H. B. Burchell, A. H. Bulbulian and H. M. Rogers *(Fellow in Medicine)*
(3) "Cranioplasties with Tantalum Plates, A New Method of Forming Plate Prior to Surgery"
G. S. Baker and A. H. Bulbulian
(4) "Accidents on the Farm and How They Happen, An Analysis of 575 Accidents (569 Patients) seen at the Mayo Clinic from January, 1935, to January, 1944"
H. H. Young and R. K. Ghormley
(5) "The Fundus of the Eye, In Disorders of the Central Nervous System"
C. W. Rucker
(6) "Streptomycin: Experimental and Clinical Observations"
W. H. Feldman, Ph.D. and H. C. Hinshaw

S-8 *Minnesota Department of Education*
Division of Vocational Rehabilitation

S-2 *Minnesota Medical Service, Inc.*

S-10 *Minnesota Safety Council*

D-4 *Minnesota Society of Clinical Pathologists*

S-1 *Minnesota State Medical Association*
Veterans Medical Service Division

D-4 *"Pathologic Anatomy Exhibit"*
St. Luke's Hospital, Duluth
Arthur H. Wells
Harold H. Joffe

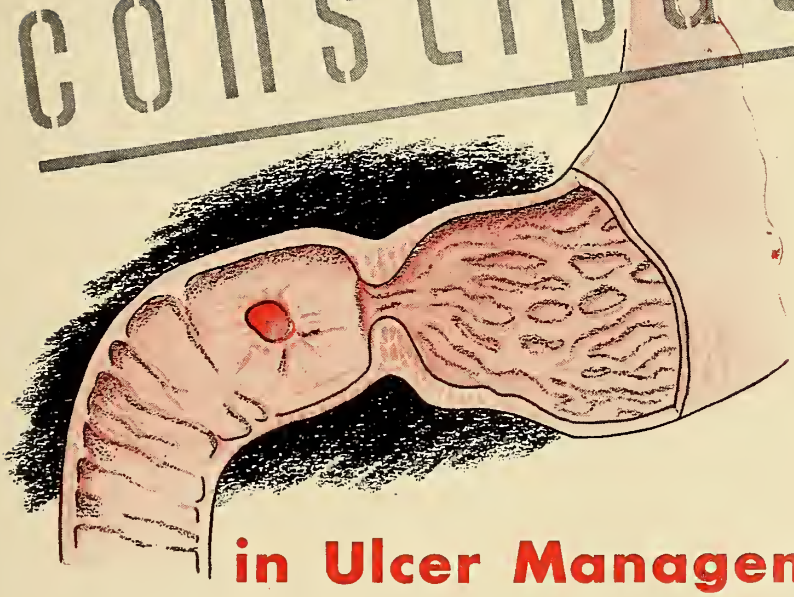
S-13 *"Radiologic Exhibit"*
University of Minnesota Hospitals
Leo G. Rigler
Thomas B. Merner

S-17 *St. Louis County Tuberculosis Control Program*
St. Louis County Tuberculosis and Health Association
Duluth and St. Louis County Health Departments
Nopeming Sanatorium

S-11 *"Teamwork in Cancer Diagnosis"*
Minnesota Division, American Cancer Society, Inc.

S-14 *"Trichinosis"*
American Medical Association

S-4 *Woman's Auxiliary to the Minnesota State Medical Association*



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"Constipation is not an important **symptom** of ulcer, but is often the outstanding **complaint.** Many patients either disregard the 'indigestion,' distress or pain . . . Such patients frequently become established cathartic addicts, with resultant bowel dysfunction and abdominal discomfort to confuse the distress picture."

—Portis, S. A.: Diseases of the Digestive System, ed. 2, Philadelphia, Lea & Febiger, 1944, p. 199.

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SEARLE *RESEARCH IN THE SERVICE OF MEDICINE*

THE AMERICAN BOARD OF ORTHOPAEDIC SURGERY

Any candidate applying for Part I of the examination of the American Board of Orthopaedic Surgery after January 1, 1951, must have the following general qualifications:

1. He must be a citizen of the United States or Canada.
2. He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States or Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners; he must have been engaged in the practice of orthopedic surgery in the United States or Canada for at least three years prior to submission of his application.
3. He must have served an internship of twelve months in a general hospital acceptable to the Board.
4. *He must have spent a year on an approved surgical residency subsequent to the completion of his internship.*

NOTE: This change consists of an additional required year of surgical training before entering on special work in orthopedic surgery.

No individual may apply for Part I of the examination of the American Board of Orthopaedic Surgery who has not completed at least one year in special orthopedic training in addition to meeting the general requirements.

The special qualifications to fulfill the requirements for eligibility to both Part I and Part II of the examination will be furnished on request to the secretary of the American Board of Orthopaedic Surgery, Dr. Francis M. McKeever, 1136 West 6th Street, Los Angeles 14, California.

AMERICAN COLLEGE OF PHYSICIANS AND SURGEONS

The Southern Minnesota Chapter of the American College of Physicians and Surgeons was formed on April 8 at a meeting held in Mankato.

Elected president of the chapter at the meeting, which was attended by thirty physicians from the city and surrounding area, was Dr. L. Gordon Samuelson of Mankato. Other officers named were Dr. Roger Hassett, Mankato, president-elect; Dr. E. A. Thayer, Fairmont, first vice president; Dr. O. J. Swenson, Waseca, second vice president, and Dr. C. F. Wohlrabe, North Mankato, secretary-treasurer. Elected to the board of directors were Dr. M. E. Lenander, St. Peter, and Dr. F. W. Franchere, Lake Crystal.

PHYSICIANS' LIABILITY INSURANCE

1. We suggest every Doctor consider increased Liability limits at this time.

10/20,000 limits cost $30.00—25/50,000 limits cost $35.31

2. Be sure you notify your insurance agent or broker of any existing business relationship such as co-partnerships, corporation, clinic, or joint office arrangements, so adequate coverage can be arranged for in addition to your individual coverage.

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In connection with the FLAME—Speedboats and Cruisers for hire—Trips around the harbor.
Seaplane for hire for trips to inland lakes of Minnesota Arrowhead Country.
TRULY A "Must-See" WHEN IN DULUTH

Principal speakers at the meeting included Dr. F. G. Benn, Minneapolis, president of the state chapter; Dr. O. A. Lenz, secretary-treasurer of the Minneapolis regional chapter, and R. H. Muehlberg, executive-secretary of the state chapter.

In his talk Dr. Benn announced that the board of directors of the organization is considering a plan to award scholarships to a number of first-year medical students, on a competitive basis, if the students agree to study to become general practitioners. The directors feel that the plan would benefit rural communities throughout the state by providing an additional supply of family doctors in small towns and farming areas, Dr. Benn stated.

AMERICAN RADIUM SOCIETY

Dr. Robert S. Stone, professor of radiology at the University of California Medical School, San Francisco, who was closely associated with atomic research during World War II, was selected to deliver the Janeway lecture at the twenty-ninth annual meeting of the American Radium Society held at the Seaside Hotel in Atlantic City on June 9 and 10.

The lecture carried the Janeway medal which was awarded to Dr. Stone at a dinner June 9. Dr. Stone's lecture, entitled "Neutron Therapy and Specific Ionization," was delivered that afternoon.

The Janeway lecturer is selected annually by a committee of six members of the American Radium Society, which is composed of many of the country's leading cancer specialists. The award was established in 1933 in memory of Henry Harrington Janeway for his pioneer work in the field of radium therapy.

The society's two-day convention this year was held in connection with the centennial meeting of the American Medical Association in Atlantic City, June 9-13. Among those taking part in the scientific program was Dr. Eugene T. Leddy, Rochester, Minnesota.

COLLEGE OF AMERICAN PATHOLOGISTS

At a meeting held at the Drake Hotel in Chicago on December 13, 1946, which was attended by 130 pathologists from almost every state in the union and from Canada, a constitution and by-laws of the College of American Pathologists were adopted and the following officers were elected: Dr. Frank W. Hartman, Detroit, president; Dr. Granville A. Bennett, Chicago, vice president, and Dr. Tracy B. Mallory, Boston, secretary-treasurer.

AMERICAN CONGRESS OF PHYSICAL MEDICINE

The American Congress of Physical Medicine will hold its twenty-fifth annual scientific and clinical session September 2 to 6, at the Hotel Radisson, Minneapolis. Scientific and clinical sessions will be given the days of September 3, 4, 5 and 6. All sessions will be open to members of the medical profession in good standing with the American Medical Association. In addition to the scientific sessions, the annual instruction courses will be held September 2, 3, 4 and 5. These courses will be open to physicians and the therapists registered with the American Registry of Physical Therapy Technicians. For information concerning the convention and the instruction course, address the American Congress of Physical Medicine, 30 North Michigan Avenue, Chicago 2, Illinois.

SOCIETY OF CLINICAL SURGERY

The seventy-sixth semi-annual session of the Society of Clinical Surgery was held in Rochester on May 9 and 10. Members of the Mayo Clinic staff provided the program for the two-day meeting, with operative clinics in the mornings and presentation of papers in the afternoons.

President of the society is Dr. Daniel C. Elkin of Emory University in Atlanta, Georgia. Other officers are Dr. Leland S. McKittrick, Boston, vice president; Dr. Howard K. Gray, Rochester, secretary, and Dr. Warren H. Cole, Chicago, treasurer. Dr. Waltman Walters, Rochester, is a member of the committee on admissions.

HEARING AID FIRM OFFERS FELLOWSHIP

L. A. Watson, president of the Maico Company, Inc., of Minneapolis, has announced a $500 graduate fellowship to the University of Minnesota for research in the field of deafness and hearing. The Board of Regents of the University has accepted the $500 stipend, and a graduate student in the department of speech will be given an opportunity to pursue original research and investigation in the field of hearing and deafness.

Among the many unsolved problems of deafness and hearing which offer promising fields of research are: the effects of fatigue and distortion on speech intelligibility, the value of selective frequency emphasis in speech intelligibility for hard-of-hearing persons, and how deafened persons hear at intense loudness levels.

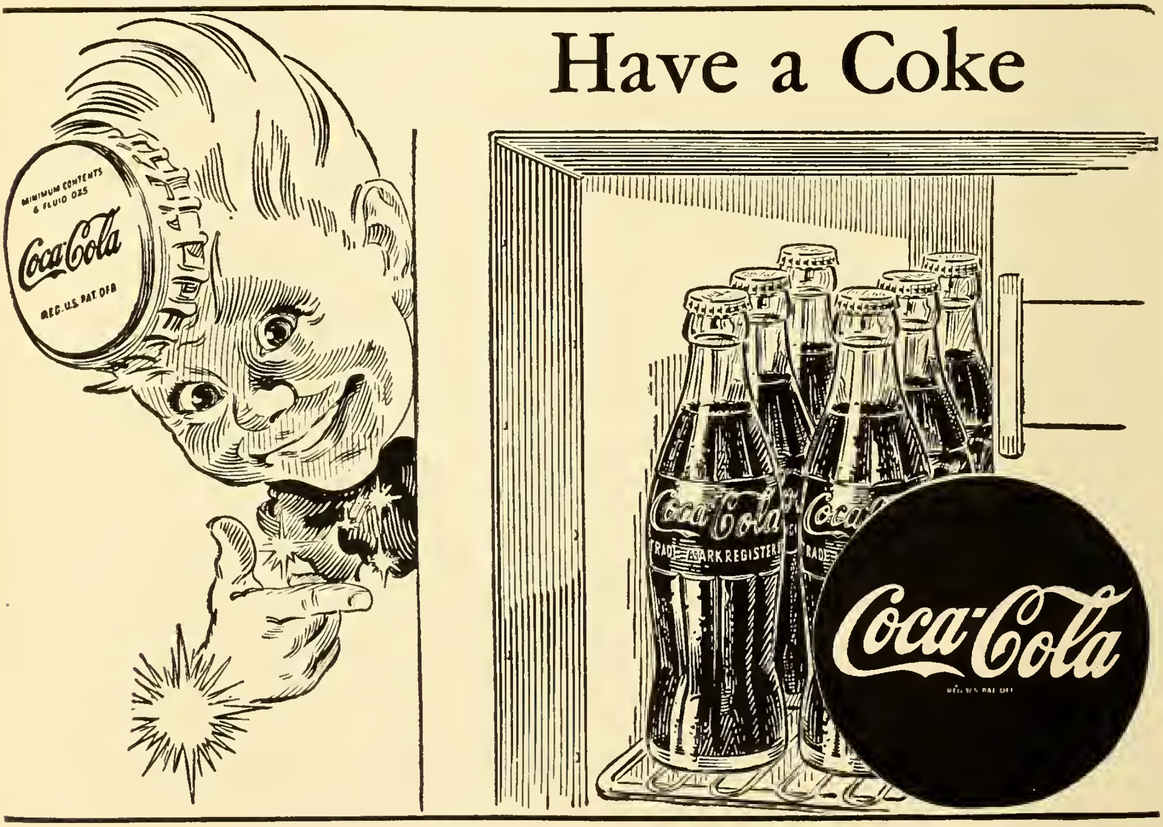
HENNEPIN COUNTY SOCIETY

A symposium on "Bowel Obstruction" was presented at the meeting of the Hennepin County Medical Society held in Minneapolis on May 5. Participants in the symposium were members of the department of surgery of the University of Minnesota Medical School, and included Dr. Clarence Dennis, Dr. Fred Kolouch, Jr., Dr. Arnold Kremen, and Dr. Christian Bruusgaard. Dr. Bruusgaard, who is from Oslo, Norway, is a traveling Fellow in Surgery.

RED RIVER VALLEY SOCIETY

At the quarterly meeting of the Red River Valley Medical Society, held in Crookston on April 15, a discussion of "Psychosomatic Medicine" was presented by Dr. O. L. Norman Nelson of Minneapolis. Dr. Nelson, who is associated with the department of medicine at the University of Minnesota Hospitals and Minneap-

(Continued on Page 681)



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WOMAN'S AUXILIARY

Hennepin County

The annual meeting of the Hennepin County Medical Auxiliary was held at the Curtis Hotel, Minneapolis, on Friday, May 2, 1947.

After a one o'clock luncheon, the following officers were elected for 1947-1948:

President—Mrs. Frederick H. K. Schaaf.
President-elect—Mrs. Reuben F. Erickson.
First Vice President—Mrs. L. R. Boies.
Recording Secretary—Mrs. Frank R. Hirshfield.
Corresponding Secretary—Mrs. Frank T. Cavanor.
Treasurer—Mrs. Arthur W. Russeth.
Auditor—Mrs. Johannes K. Moen.
Custodian—Mrs. Leo W. Fink.

Ramsey County

The April meeting of the Ramsey County Medical Auxiliary was a tea at the home of Mrs. L. W. Barry, 2193 Sargent Avenue, Saint Paul. Miss Etta Lubbert, Superintendent of Nurses at Ancker Hospital, presented a program for recruiting nurses.

Mrs. Lyle Fisher of Saint Paul sang a group of children's songs which she has composed.

Red River Valley

Election of officers featured the meeting of the Red River Valley Medical Auxiliary which was held April 15 at the home of Mrs. M. O. Oppegaard.

The meeting immediately followed the dinner meeting at the Hotel Crookston which was attended by members of the medical association and its auxiliary.

All officers were re-elected for the coming year. They are Mrs. Oppegaard, president; Mrs. O. K. Behr, vice president; Mrs. A. R. Reff, secretary, and Mrs. C. L. Oppegaard, treasurer.

The office of social secretary was added to the slate and Mrs. R. O. Sather was elected to that office. Sixteen members attended the meeting.

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In Memoriam

FRANCIS E. HARRINGTON

Dr. Francis E. Harrington, for twenty-four years health commissioner of Minneapolis until his retirement in 1944, died at West Palm Beach, Florida, on May 10, 1947.

Born in Norfolk, Virginia, on June 19, 1879, the son of a brigadier general in the U. S. Marine Corps, Dr. Harrington later attended public schools in Boston and Washington, D. C. He received a B.Sc. degree from Gonzaga College, Washington, in 1899 and an M.D. degree from Columbia University, Washington, now known as George Washington University, in 1904. After interning at the Casualty Hospital, Washington, he practiced in Washington from 1904 until 1910 and at Cumberland, Maryland, from 1910 to 1914. He then joined the U. S. Public Health Service and had assignments in nine different states between the years 1914 and 1920.

In 1920 Dr. Harrington was called to be commissioner of health in Minneapolis, in which capacity he served until he resigned in 1944. In addition to this full-time job, he acted as superintendent of Minneapolis General Hospital from 1937 to 1939 and again from 1942 until 1944. In 1945 he was appointed superintendent of the Elizabeth Kenny Institute.

In addition, he was director of Lymanhurst Health Center, clinical professor of preventive medicine and public health at the University of Minnesota, and a member of the Glen Lake Sanatorium Commission of Hennepin County.

Dr. Harrington was a charter member and first president of the International Society of Medical Health Officers in 1928. He was also a past secretary and treasurer of the society.

He was a member of many organizations, including the Association of Military Surgeons of the United States, the Military Order of Carabao, the National Tuberculosis Association; a Fellow of the American College of Physicians; a past president of the Minnesota Trudeau Society, the Minnesota Sons of the Revolution, the National Society of the Sons of the American Revolution, the Knights of Columbus, and the St. Thomas Catholic Church.

Dr. Harrington is survived by his wife, two sons and five daughters.

One of Dr. Harrington's outstanding characteristics was his executive ability. His energy and honesty and his pleasing personality enabled him to accomplish much in his chosen field of public health.

PETER M. HOLL

Dr. Peter M. Holl, Minneapolis, died April 13, 1947, at the age of eighty-four.

Dr. Holl was born in Lake Prairie Township, Nicollet County, on August 19, 1862. He obtained his medical education at the Minnesota Hospital College, Minneapo-

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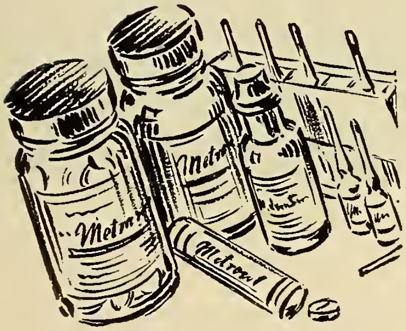

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lis, from which he graduated in 1887 and at Bellevue Medical College, New York. Postgraduate work was taken in pediatrics at the New York Polyclinic.

Dr. Holl was a city physician from 1907 to 1909. He was a member of the Hennepin Lodge, A.F. and A.M., and of the Hennepin County Medical Society, and the Minnesota State and American Medical Associations.

Dr. Holl's wife, the former Annie May Fillmore, passed away in 1931.

THOMAS M. JOYCE

Dr. Thomas M. Joyce, of Portland, Oregon, died on April 18, 1947.

Dr. Joyce was born January 28, 1885, at Emmetsburg, Iowa; attended Notre Dame University from 1903 to 1906; received the degree of M.D. in 1910 from the University of Michigan, and was an intern at the University Hospital, Ann Arbor, from 1910 to 1911. He entered the Mayo Clinic in June, 1911, and was an intern at St. Mary's Hospital for twenty-five months and a surgical assistant for nine months. He left the Mayo Clinic in April, 1914.

During World War I he was chief surgeon at Base Hospital 46, and was with the AEF for nine months. At the time of his death he was head of the department of surgery at the University of Oregon Medical School and head of the department of surgery at the Multnomah Hospital and Portland Clinic. He also was attending surgeon at St. Vincent's Hospital.

Dr. Joyce was a member of the American College of Surgeons, the American Medical, the American Surgical, and the Pacific Coast Surgical Associations, was president of the Alumni Association of the Mayo Foundation in 1923-24 and a member of Alpha Omega Alpha.

RED RIVER VALLEY SOCIETY

(Continued from Page 678)

olis General Hospital, was introduced by the president of the society, Dr. C. G. Uhley, Crookston.

Another feature of the meeting was a talk by Dr. J. F. Norman, Crookston, on the development of plans for pre-paid medical service by the state medical association.

WASHINGTON COUNTY SOCIETY

At the regular session of the Washington County Medical Society in Stillwater on May 13, Dr. Wade R. Humphrey, Stillwater, was in charge of a discussion of plans for the enlargement and improvement of Lake View Memorial Hospital in Stillwater. To clarify the discussion, Dr. Humphrey showed enlarged photographs of the hospital as it is at the present time, and pointed out just where additions could be made. He then showed the group a colored drawing to demonstrate how the suggested changes would appear from a scenic point of view. After the presentation a committee was appointed to investigate the possibility of carrying out such a project.

◆ Of General Interest ◆

MOWER COUNTY HONORS THREE FIFTY-YEAR PHYSICIANS

On March 26, 1947, the members of the Mower County Medical Society gave a dinner in honor of three Mower County physicians, each of whom has served his community continuously for over fifty years.

The recipients of the tributes were Dr. A. E. Henslin, eighty-one, who has practiced at LeRoy for fifty-six years; Dr. O. H. Hegge, seventy-five, who has been a physician in Austin for fifty-four years; and Dr. G. J. Schottler, seventy-six, who has practiced at Dexter for fifty-one years.

Each of the three deans of Mower County medicine has a son who is a physician. At the honor dinner, biographies of their fathers were read by Dr. M. E. Henslin, Leroy, and Dr. R. S. Hegge, Austin. Dr. Max Schottler, Minneapolis, was unable to attend the dinner, but he prepared a biography of his father which was read by Dr. Paul Leck, president of the Mower County Medical Society, who was master of ceremonies.

A highlight of the program was the reminiscing done by the three guests of honor, who recalled vivid episodes, both humorous and grim, from their days of horse-and-buggy medicine—nerve-wracking journeys through mud-covered country, on-the-spot amputations in farm shanties, struggles with x-ray machines that had hand-cranked generators and plate glass films.

From left to right: Dr. G. J. Schottler, Dexter; Dr. A. E. Henslin, LeRoy, and Dr. O. H. Hegge, Austin, Minnesota.

At the dinner which was attended by members of the medical society and their wives, Dr. Henslin was also honored for his thirty years of continuous service as treasurer of the society.

Dr. R. L. J. Kennedy, Rochester, district counselor for the Minnesota State Medical Association, paid tribute

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to the three physicians on behalf of the state organization. Dr. L. A. Buie, Rochester, president of the state association, spoke on "Present Trends in Medical Practice and Social Legislation Affecting Medicine."

DR. WENDELL GRINNELL HONORED

A record of forty-seven years in the practice of medicine belongs to Dr. Wendell Grinnell who recently celebrated a birthday in Preston, Minnesota. On Sunday, April 20, 1947, he was honored and feted by hundreds of his townspeople as well as by patients throughout the surrounding country.

To do honor to his forty-seven years of faithful service, a general homecoming was held in Preston's town hall. There his countless friends and patients gathered to wish him well.

Dr. Grinnell came to Fillmore County in 1900, located in Wykoff for one year, then moved to Preston, the county seat. In those early days the horse and buggy provided the general means of travel for a country doctor. He kept several driving horses, along with a driver to transport him to the outlying towns. For many years he owned and operated his own hospital in Preston but this since has been closed.

Many a night he would keep vigil at the bedside of a patient, only to find an urgent case waiting when he returned home, necessitating perhaps another long drive before he could snatch a few hours of sleep.

At this birthday celebration a program was presented with Charles V. Michener acting as master of cere-

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Two-week course in Surgical Anatomy & Clinical Surgery Starting July 21, August 18, September 22.
One-week course in surgery of Colon & Rectum starting September 15 and November 3.
Two-week course in Surgical Pathology every two weeks.

FRACTURES & TRAUMATIC SURGERY—Two-week intensive course starting June 16, October 6.

GYNECOLOGY—Two-week intensive course starting September 22, October 20. One-week course in Vaginal Approach to Pelvic Surgery starting September 15, October 13.

OBSTETRICS—Two-week intensive course starting September 8, October 6.

MEDICINE—Two-week intensive course starting October 6.
Two-week course in Gastro-Enterology starting October 20.
One-week course in Hematology starting September 29.
One-month course in Electrocardiography & Heart Disease starting June 16, September 15.
Two-week intensive course in Electrocardiography & Heart Disease starting August 4.

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monies. Rev. Allen W. Flohr gave the invocation. Musical selections consisted of vocal solos by Rev. Donald Roesti and Mrs. M. Anderson and group singing by Mrs. Claude Cutter and daughters Fauntie and Doris. Rev. P. J. Nestande of Lanesboro and Rev. Gaede spoke in tribute to Dr. Grinnell, following which the audience sang "Happy Birthday" to the honor guest.

At this time a tray with hundreds of birthday cards was presented to Dr. Grinnell, who in turn responded with a short talk of appreciation and thanks for the gifts. He stressed the fact that his many good friends meant more to him than all the honors he might receive. He compared Preston and the township to a garden which he claimed as his own, with his numerous friends and patients as the flowers in that garden.

Many out-of-town guests attended the function; in fact, the hall was overflowing. The demonstration of good fellowship and friendship must have been a source of great satisfaction to Dr. Grinnell after his faithful service for almost half a century.

* * *

Dr. M. M. Loucks has installed a new x-ray machine in his offices at Kelliher.

* * *

Dr. E. V. Allen, Rochester, has been re-elected governor of the American College of Physicians for a term of three years.

* * *

Dr. F. G. Chermak, International Falls, attended the April meeting of the St. Louis County Medical Society held in Eveleth.

* * *

During the last week of April, Dr. R. V. Sherman, Red Wing, attended a meeting of the American College of Physicians in Chicago.

* * *

Early this spring, Dr. E. R. Samson, Stillwater, spent two weeks at the Cook County General Hospital, Chicago, studying surgery.

* * *

On May 1, Dr. T. H. Leitschuh, formerly associated with Dr. J. A. Cosgriff in Olivia, opened a medical office in the Hensch Building in Sanborn.

* * *

Discontinuing his practice in Gibbon, Dr. Paul C. Benton of that city is beginning a three-year course in neuro-psychiatry at the University of Minnesota.

* * *

Dr. Clyde A. Undine, Minneapolis, attended the clinical meeting of the American College of Physicians held in Chicago April 28 to May 2.

* * *

In Winnipeg on May 5, at the sectional meeting of the American College of Surgeons, Dr. R. K. Ghormley, Rochester, led a panel discussion on fractures and spoke on "Fractures of the Hip."

* * *

Dr. Charles Vandersluis was named by the Bemidji City Council to fill the unexpired term of Dr. D. H. Garlock who resigned as city health officer early in May.

Dr. Everett C. Perlman, Minneapolis, announces the removal of his offices to 301 Kenwood Parkway, Minneapolis, and his association with Dr. Max Seham in the practice of pediatrics.

* * *

It was recently announced that Dr. O. J. Hagen, Moorhead, has been made an emeritus member of the executive committee of the Minnesota Public Health Association, of which he is a former president.

* * *

Dr. Ramby C. Rasmussen, Newport, has been appointed medical consultant for the Master Eye Foundation, a nonprofit organization that supplies guiding dogs free of charge to eligible blind persons.

* * *

Dr. M. E. Mosby, Long Prairie, has been taking a three-month postgraduate course in eye, ear, nose and throat diseases at the New York Polyclinic Hospital, New York City.

* * *

At the sectional meeting of the American College of Surgeons, held in Winnipeg on April 28 and 29, Dr. Fred Kolouch, Jr., Dr. James M. Hayes and Dr. Clarence Dennis, all of Minneapolis, were speakers.

* * *

Dr. Clare Gates, assistant health commissioner of Minneapolis, spoke at the graduation exercises for forty-three Franklin Hospital practical nurses on April 23 at the Woman's Club Assembly, Minneapolis.

* * *

Recently appointed assistant professor in the department of bacteriology and immunology at the University of Minnesota is Dr. W. F. M. Limans, formerly of Duluth, who received his Ph.D. degree from the University in March.

* * *

The former medical director of St. Barnabas Hospital, Minneapolis, Dr. Clement C. Clay has been appointed director of a graduate course in hospital administration which will be held at Yale University, starting in September.

* * *

"Streptomycin: An Antibiotic Effective Against Some Forms of Clinical Tuberculosis" was the topic of a paper presented by Dr. H. C. Hinshaw, Rochester, at a meeting in Atlantic City in early May of the American Society for Clinical Investigation.

* * *

Dr. Owen H. Wangensteen, director of the department of surgery at the University of Minnesota Medical School, spoke on new medical discoveries at the Westminster Youth Fellowship service on April 20 at Westminster Presbyterian Church in Minneapolis.

* * *

At a meeting sponsored jointly by the Colorado State Medical Society and the University of Colorado School of Medicine on May 12 and 13 in Denver, Dr. F. H. Krusen, Rochester, spoke on "The Development of the Modern Era of Physical Medicine" and "Physical Medicine in Diagnosis and Treatment of Poliomyelitis."

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ST. PAUL MINNEAPOLIS

Dr. Cecil J. Watson, chief of the department of medicine at the University of Minnesota Medical School, was elected recorder of the Association of American Physicians during the May convention of the organization at Atlantic City, New Jersey.

* * *

Coeds at the University of Minnesota were told of present-day vocational opportunities for women at a conference on May 20 conducted by a select group of faculty members, one of whom was Dr. Ruth Boynton, director of the Student Health Service.

* * *

Speaking at a meeting of the Minnesota Association of Hospital and Medical Librarians, at the Radisson Hotel in Minneapolis on May 17, Dr. Olga S. Hansen discussed new developments in medicine, and Dr. Francis Walsh talked on the characteristics of the eye.

* * *

Dr. M. B. Hebeisen, Dr. G. T. Schimelpfenig and Dr. B. H. Simons, all of Chaska, attended the annual meeting and banquet of the Scott-Carver Medical Society in Shakopee on April 9, where they heard Dr. Wayne S. Hagen, Minneapolis, speak on liver disease.

* * *

Dr. E. B. Flink, assistant professor of medicine at the University of Minnesota Medical School, who has been University representative at Ancker Hospital, Saint Paul, for the past two years, became supervisor of the outpatient department of the University Medical School on June 15, 1947.

* * *

Dr. W. D. Holcomb, formerly of Colorado Springs, Colorado, accepted the senior residency at Abbott Hospital, Minneapolis, and began his work there on April 1. A graduate of Boston University, Dr. Holcomb has been approved for visiting membership by the Hennepin County Medical Society.

* * *

The Minnesota Hospital Association has received the first award of the American Hospital Association in recognition of its public education program led by Dr. William A. O'Brien of the University of Minnesota. The Minnesota group has been given the first award each year since 1943.

* * *

Announcement has been made that Dr. F. Paul Kortsch has opened offices for the practice of medicine at 6614 Lyndale Avenue South, Richfield, Minneapolis. A graduate of the University of Colorado, Dr. Kortsch has conducted a clinic and general practice at Prior Lake for the past ten and one-half years.

* * *

Dr. A. W. Skoog-Smith, who left Mahnomen in March to study radiology at the University of Minnesota and at Cornell Medical Center, has been replaced by Dr. Kenneth Danford, formerly of Minneapolis. Dr. Danford, a graduate of the Temple University School of Medicine, is associated with Dr. K. W. Covey in Mahnomen.

* * *

Campbell physician, Dr. W. E. Wray, was honored at an April dinner at which he was paid tribute for fifty years of medical practice. Since he began practice, Dr. Wray has brought 2,500 babies into the world. Now seventy-three years old, he intends to continue his medical practice.

* * *

Chairman of the Blue Earth County Medical Society Tuberculosis Committee, Dr. A. G. Liedloff of Mankato, attended a meeting in Saint Paul on May 9 to confer with other county chairmen and with members of the Committee on Tuberculosis of the state medical association.

* * *

Honor guests for the annual Pioneer Dinner of the Chisholm Chamber of Commerce on May 26 were Dr. and Mrs. A. W. Graham of Chisholm. Dr. Graham, author of numerous articles in medical journals, has been the school physician of the Chisholm district for many years.

* * *

With his resignation, early in May, Dr. H. C. Doms, Slayton, ended fifteen years of service as Murray County representative on the board of commissioners of the Southwestern Minnesota Tuberculosis Sanatorium in Worthington. Appointed to fill the vacancy was Dr. R. F. Pierson, also of Slayton.

* * *

Dr. Earl H. Wood, Rochester, Mayo clinic staff member, plans to attend the seventeenth International Physiological Congress to be held in Oxford, England, from July 22 to 25. Dr. Wood is one of ten men in the country to receive an attendance award to the Congress given by the American Physiological Society to physiologists under thirty-five years of age who have made outstanding research contributions.

* * *

Dr. Charles A. Haberle, formerly of Minneapolis, has become affiliated with the clinic operated by Dr. O. G. Lynde in Thief River Falls. A graduate of the University of Minnesota Medical School, Dr. Haberle served his internship at Minneapolis General Hospital and then joined the staff of Glen Lake Sanatorium near Minneapolis.

* * *

Chosen to represent Saint Paul Jewish physicians, Dr. William Ginsberg in April signed a goodwill certificate which was to be sealed in the cornerstone of a new tuberculosis hospital, a unit of Hebrew University Hospital on Mt. Scopus, Jerusalem. Funds for the erection of the hospital were raised by Hadassah Medical Organization.

* * *

Dr. Karl H. Pfeutze, superintendent and director of the Mineral Springs Sanatorium in Cannon Falls, conducted a chest clinic in Faribault on April 21. At the clinic, which is an annual spring event in Faribault, Dr. Pfeutze interviewed former patients of the sanatorium and administered free Mantoux tests to all volunteers.

* * *

The recently organized army community relations committee in Rochester is headed by Dr. Charles W. Mayo. Part of a program being launched by the Fifth

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Army of the United States, the committee will inform the public of army activities, will advise the commanding general on public trends in regard to army affairs, and will assist in the army recruiting campaign.

* * *

At the annual meeting of the Children's Hospital Association in Saint Paul on April 28, Dr. Clifford G. Grulee, Jr., spoke on "Acute Poliomyelitis in Children." A member of the staff of the University of Minnesota Hospitals, Dr. Grulee has done extensive research work in connection with the poliomyelitis project of the hospitals.

* * *

As a guest of the Section of Radiology and Physiotherapy of the State Medical Association of Texas, Dr. H. M. Weber, Rochester, presented three papers at the group's meeting during the first week of May. His topics were "Roentgenologic Contribution to the Diagnosis of Colitis and Enteritis," "Roentgenologic Examination in the Diagnosis of Functional Intestinal Abnormality," and "Conduct of Roentgenologic Examination of the Colon and Small Intestine."

* * *

At a dinner following the American College of Physicians postgraduate course in rheumatic diseases, held in Rochester during March, Dr. Francis J. Braceland of the Mayo Clinic staff presented "The Saga of a Psychiatrist in World War II." Dr. Braceland, who studied in Germany in 1935 and 1936, and who was a visitor at the Nuernberg war trials, drew comparisons between the arrogant Nazi leaders before the war and the confused defeated men who were on trial. He also discussed aspects of the psychiatric situation in Europe today.

* * *

Dr. and Mrs. B. O. Mork, Sr., Worthington, took off from LaGuardia Field, New York, on May 25 for a trans-Atlantic flight to Oslo, Norway. Time for the trip was expected to be sixteen hours. After more than a month in Norway and Sweden, they plan to begin their homeward flight from Stockholm on July 2. That will be the thirteenth Atlantic crossing for Dr. Mork. His first, years ago, from Norway to the United States, required three weeks.

* * *

Miss Isabelle J. Anderson, librarian of the Ramsey County Medical Society library since 1930, has accepted the position of librarian of the medical division of the University of Utah library at Salt Lake City. She will assume her new duties there on July 1, 1947.

Miss Anderson will be succeeded at the Ramsey library by Miss Mary M. Post, who has been assistant librarian at the library of the University of Louisville School of Medicine.

* * *

Two weeks after his arrival home in March from medical service in Europe, Dr. Mentor H. Christensen, Northfield, enrolled at the Center for Continuation Study at the University of Minnesota, planning to study orthopedics. Dr. Christensen, who was graduated from the University of Minnesota Medical School shortly

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before beginning thirty-two months in the army, spent seventeen months in service in Germany, France, and Africa.

* * *

April 29 was the date of the marriage of Dr. Anthony L. Ourada of Walnut Grove and Miss Mary Henkels of Heron Lake. Their double ring ceremony was held in the Sacred Heart Church in the bride's home town.

Dr. Ourada received his medical degree from the University of Minnesota Medical School in March, 1946. A reserve officer in the U. S. Army Medical Corps Dr. Ourada will report to Fort Sam Houston, Texas, in July to be assigned to active duty.

* * *

Dr. A. M. Snell, Rochester, had a busy week in Los Angeles early in May as a guest speaker at a meeting of the California State Medical Association. He was moderator in a panel discussion on diseases of the stomach, conducted a pathologic conference on diseases of the liver, participated in a symposium on "What's New?" spoke to the general assembly on "Viral Hepatitis and the Public Health," and conducted a pathologic conference on liver diseases at the Cottage Hospital, Santa Barbara.

* * *

Antibiotics, anesthetic aids, and aviation medical advances were some of the subjects covered by Dr. David A. Sher, Virginia, in a talk before the Virginia Study Club at its regular meeting in April. Speaking on the topic, "Recent Advances in the Field of Medicine and Peeps at Things to Come," Dr. Sher, a member of the Lenont-Peterson Clinic, pointed out the many discoveries made and the new methods developed in medicine and surgery in the ten years between 1936 and 1946.

* * *

Landing a 128-pound tarpon during a fishing rodeo in Tampico, Mexico, won second prize for Dr. H. W. Goehrs, St. Cloud, while on a vacation trip this spring.

Dr. Goehrs, who made his catch at the mouth of the Panuco River, fishing from a skiff about half again as large as an ordinary rowboat, was pleased but not particularly amazed at the size of his prize-winning fish. A few days earlier he had landed two tarpons which were over six feet in length and tipped the scales at 150 pounds.

* * *

Dr. Duane R. Ausman announces that he has opened offices for the general practice of medicine and surgery at 1673 Arona Street, in the Falcon Heights District, Saint Paul. A graduate of the University of Minnesota Medical School, Dr. Ausman entered the army in 1942 and served in Australia, New Guinea and the Philippines. He was awarded the Bronze Star for meritorius conduct during the invasion of the Philippines. Following his discharge from service, he was associated with the Health Service of the University of Minnesota.

* * *

One of the papers presented at the meeting of the Association of American Physicians in Atlantic City on May 6 and 7 was "Striking Syndrome of Marked Bloat-

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ing Without Gas in the Bowel" by Dr. W. C. Alvarez, Rochester. From Atlantic City Dr. Alvarez went to Charleston, West Virginia, to speak on "Puzzling Types of Abdominal Pain" at a meeting of the West Virginia State Medical Association. By May 16 he was in Toronto, Canada, where he addressed the Toronto Medical Association on the subject, "What Is Wrong with the Dyspeptic Whose Findings Are All Negative."

* * *

In Lake City, on May 1, Dr. Robert N. Bowers announced that Dr. William P. Gjerde, formerly of Saint Paul, had joined him in a partnership medical practice.

Dr. Gjerde, a native of Staples before entering the University of Minnesota, received his medical degree in 1939 and then joined the staff of the Northern Pacific Hospital in Saint Paul. During the war he served in the army for four years, spending two of the years in China. Following his discharge from miltary service, he returned to Saint Paul. For the last six months before he joined Dr. Bowers in Lake City, Dr. Gjerde took postgraduate work at the University of Minnesota Hospitals.

Dr. Harry E. Bowers, father of Dr. Robert N. Bowers, announced his retirement at the same time. He has practiced at Lake City since 1919.

* * *

The man who invented a workable external "artificial kidney," Dr. W. J. Kolff of Holland, was in Minneapolis on May 17 to inspect a model of his invention constructed by Dr. Roger M. Reinecke, assistant professor of physiology at the University of Minnesota.

While Dr. Kolff's device has been used on patients, and Dr. Reinecke's has been used only in animal experiments, both machines work on the same principle: the removal of urea from the blood by passing the blood through 30 to 40 yards of cellophane tubing stretched on a mesh-covered cylinder which is rotated through a salt solution.

Dr. Reinecke first heard of Dr. Kolff's machine in September, 1944, when as an army medical corps officer he landed in Holland with the 82nd Airborne Division. From various reports of the original device—he never actually saw it himself—Dr. Reinecke later was able to construct his own model after he joined the staff of the University of Minnesota last fall.

"Doctor to a Million" was the title conferred on Dr. William A. O'Brien, University of Minnesota director of postgraduate medical education, in the May issue of *Radio Mirror* magazine. The title-bestowing article commented on Dr. O'Brien's public health programs which have been broadcast on station WCCO since 1928.

During the last two weeks of April, extracurricular speaking assignments for Dr. O'Brien included (1) comments on patent medicines at the Minnesota State Pharmaceutical Association convention in Minneapolis, (2) a talk on "Social Organizations for Health Maintenance," one of a series of lectures on "Our World and Our Times" sponsored by the general extension division of the University of Minnesota at the Center for Continuation Study, and (3) an address in Stillwater at a dinner marking the completion of the first year of county nurse work in Washington County.

* * *

Principal speakers at the annual meeting of the Group Health Association, held in Minneapolis in April, were Dr. Frederick W. Jackson, deputy public health minister of Manitoba, Canada, and Dr. M. W. Shadid, Elk City, Oklahoma.

Dr. Jackson described a government-sponsored medical program to attract physicians from cities into the rural areas of Manitoba. Dr. Shadid, founder of the first rural co-operative hospital in the United States, stated that medicine has become "so complex that the individual doctor is not able to render adequate care," and asserted that medical care must be based on group work to be effective. During the weeks following the association meeting, Dr. Shadid advocated his ideas on community co-operative hospitals in speeches delivered at various cities in Minnesota, including Benson, Bagley and Duluth.

* * *

Domesticated radar may become a valuable therapeutic aid in the future.

Experiments being conducted by the Mayo Foundation for Medical Education and Research have suggested that ultrahigh-frequency radio waves, similar to those used in wartime radar, may produce better results than the short-wave diathermy machines now being used in physical medicine.

The basic unit of both radar and the portable micro-

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wave-producing units being tested by the Mayo Foundation experimenters is a small vacuum tube called the cavity magnetron, which emits a beam of ultrahigh-frequency radio waves that can be focused or even bent around a corner. The frequency of such waves is 2,450 megacycles (close to two and one-half billion cycles per second).

It is hoped that the experiments will show that these microwaves will penetrate more deeply and produce longer-lasting heat than the waves emitted by present-day short-wave diathermy machines.

HOSPITAL NEWS

Work was begun in late April on alterations and additions to a building in Forest Lake which will become the new Forest Lake Clinic Hospital. The hospital when completed will consist of three floors, each 30 by 60 feet in area.

Complete equipment has already been purchased and is ready for installation as soon as the structure is finished. Much of the equipment, which includes a new x-ray machine, sterilizers, and mechanical beds with inner-spring mattresses, was obtained from war surplus material.

The hospital is being planned as a twelve-bed unit but will be able to take care of additional patients on an emergency basis. Kitchen and dining room facilities will be located in the basement, with a dumb-waiter arrangement for conveying food to the upper floors. An emergency room, x-ray room, laboratory, waiting room and two wards will be located on the first floor, while second floor will be devoted to a maternity department, with a delivery room, nursery, two wards and two private rooms. Two graduate nurses will be employed by the hospital.

Dr. E. C. Burseth, recently discharged from army service, will be associated with Dr. G. M. Ruggles, of the Forest Lake Clinic, in the operation of the new hospital.

* * *

On April 1 the board of directors of the Kittson War Veterans' Memorial Hospital in Hallock provided permanent unified living quarters for the hospital nursing staff by purchasing a private residence near the hospital to serve as a nurses home.

* * *

Dr. Henry Hutchinson, former assistant superintendent at Moose Lake State Hospital, has been appointed acting superintendent to succeed Dr. M. W. Kemp who resigned several months ago. During the war Dr. Hutchinson served as acting superintendent of the Hastings State Hospital while its superintendent, Dr. Ralph Rossen, was in the navy.

At a meeting of the Commercial Club of Cannon Falls in late March, Dr. Viktor O. Wilson, of the Minnesota State Department of Health, discussed the building of a local hospital and the expense involved in the construction of such a structure. He also described the Federal aid plan to assist communities in the financing of needed local hospitals, under a state administration.

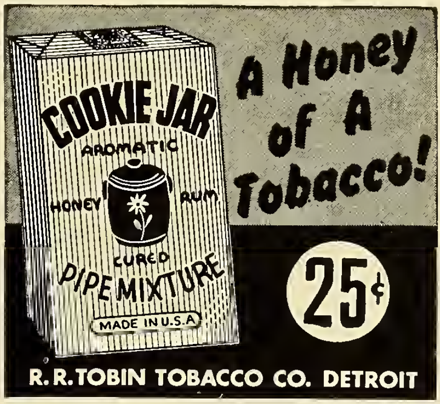
* * *

The new board of directors of Sanford Hospital in Farmington met during April and named Lawrence Thorson, Northfield, as the new hospital manager. Elected to office at the meeting were Dr. J. A. Sanford, Farmington, president; L. A. Godby, vice president, and Helen Kakac, secretary-treasurer.

Plans for refinancing the hospital were left for further discussion at the next meeting. The institution is now handling an average of 500 patients per year.

* * *

General solicitation for funds to help finance a $1,500,000 addition to St. Luke's Hospital, Duluth, began on June 1 under the direction of G. A. Andresen, presi-



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dent of the Duluth Chamber of Commerce and general chairman of the campaign.

Leaders of the public subscription campaign hope to raise $750,000 to insure erection of a proposed 141-bed addition to the hospital, with expanded laboratory, pathological and other technical facilities.

* * *

The annual convention of the Minnesota Hospital Association was held in Minneapolis at Hotel Radisson on May 15, 16, and 17, with President Earl C. Wolf, Rochester, presiding.

One of the featured speakers at the meeting was George Bugbee, executive director of the American Hospital Association, who discussd "National Problems Confronting Hospitals" and also spoke on "Hospital Accounting and Its Relationship to Reimbursable Formula."

Other speakers on the three-day program were Miss Nellie Gorgas, administrator of St. Barnabas Hospital, Minneapolis, and president-elect of the Minnesota Hospital Association; Hubert Humphrey, mayor of Minneapolis; Dr. Malcolm MacEachern, associate director of the American College of Surgeons; and Miss Lucille Pietry, nursing consultor of the U. S. Public Health Service.

* * *

At a meeting held on May 6, citizens of Anoka and the surrounding area began preliminary organization to start a drive for the construction of a hospital in the community. It was voted at the general meeting to elect a board of directors, to incorporate, and to have a large public relations committee with representatives from each township, rural Hennepin county and each ward in Anoka.

* * *

Recent speakers at the monthly staff meetings of St. Luke's Hospital in Duluth have been Dr. L. N. Leven, Saint Paul (Skin Transplants); Dr. Norman Johnson, Minneapolis (Neuropyschiatric *Dis*-eases); Dr. Mark B. Coventry, Rochester (The Surgical Treatment of Arthritis); and Dr. E. Gordon, Madison, Wisconsin (Amino Acids).

Staff members of St. Luke's Hospital have recently participated in several regional medical meetings:

Rice Lake (Wis.) County Medical Society meeting—Papers were presented by Dr. A. H. Wells, Dr. Harold Joffe, and Dr. E. E. Barrett.

Tricounty Medical Society meeting—Papers presented by Dr. S. H. Boyer, Jr., Dr. F. C. Jacobson, Dr. A. L. Abraham, and Dr. C. H. Mead.

Interurban Academy of Medicine meeting—Papers presented by Dr. Harold R. Joffe, Dr. P. B. Boman, and Dr. C. H. Mead.

Douglas County Medical Society meeting—Papers presented by Dr. F. C. Jacobson and Dr. C. H. Mead.

MEEKER COUNTY TUBERCULOSIS CONTROL PROJECT

(Continued from Page 636)

A considerable number from adjacent counties who have heard of the Meeker County physicians' interest in tuberculosis are requesting examinations. At present, all patients entering the Litchfield hospital have the tuberculin test administered, and the reactors are completely examined for clinical disease. Moreover, each physician in the county continues to administer as many tuberculin tests as possible in his office each week. Thus, our tuberculosis activities are being perpetuated, and when normal conditions have been restored throughout the county, we plan to resume an even more vigorous campaign against this disease.

Through the demonstration project, our physicians have become well informed on all phases of tuberculosis work. Their present capabilities in this field probably never would have been achieved without the demonstration. Inasmuch as the physicians donated their time and work, and no outside equipment or personnel was introduced, the general public has a kindly feeling toward the medical profession, as well as confidence in its integrity and ability to provide them with all that is necessary to control disease. Our satisfaction in the accomplishment to date is such that we feel justified in recommending an identical program to the physicians of all other counties of the State of Minnesota.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Color Atlas of Hematology, With Brief Clinical Descriptions of Various Diseases. Roy R. Kracke, M.D., Dean and Professor of Clinical Medicine, Medical College of Alabama, Birmingham, Alabama. 204 pages. Illus. Price, cloth, $5.00. Philadelphia: J. B. Lippincott Co., 1947.

Milk and Food Sanitation Practice. H. S. Adams, B.Sc. Chief, Bureau of Environmental Hygiene, Division of Public Health, Minneapolis, and Lecturer, School of Public Health, University of Minnesota. 311 pages. Illus. Price, cloth, $3.25. New York: The Commonwealth Fund, 1947.

Office Immunology, Including Allergy. A Guide for the Practitioner. Edited by Marion B. Sulzberger, Professor of Clinical Dermatology and Syphilology and Director of New York Skin and Cancer Unit, New York Post-Graduate Medical School and Hospital; and Rudolph L. Baer, Instructor in Dermatology and Syphilology, New York Skin and Cancer Unit, New York Post-Graduate Medical School and Hospital. 420 pages. Illus. Price, $6.50, cloth. Chicago: Year Book Publishers, Inc., 1947.

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(Continued from Page 634)

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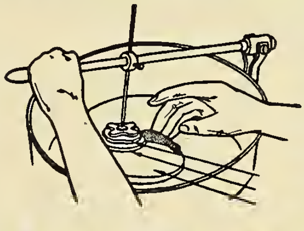

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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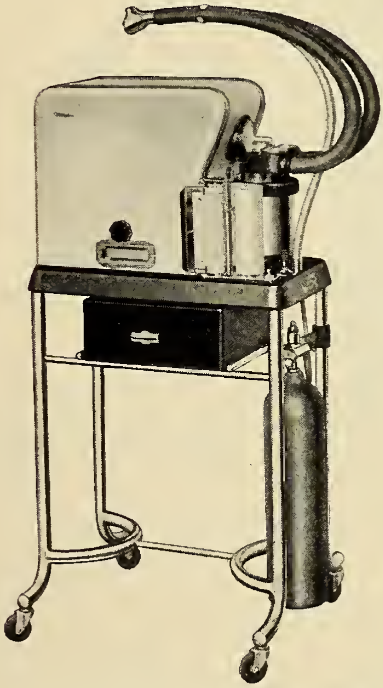

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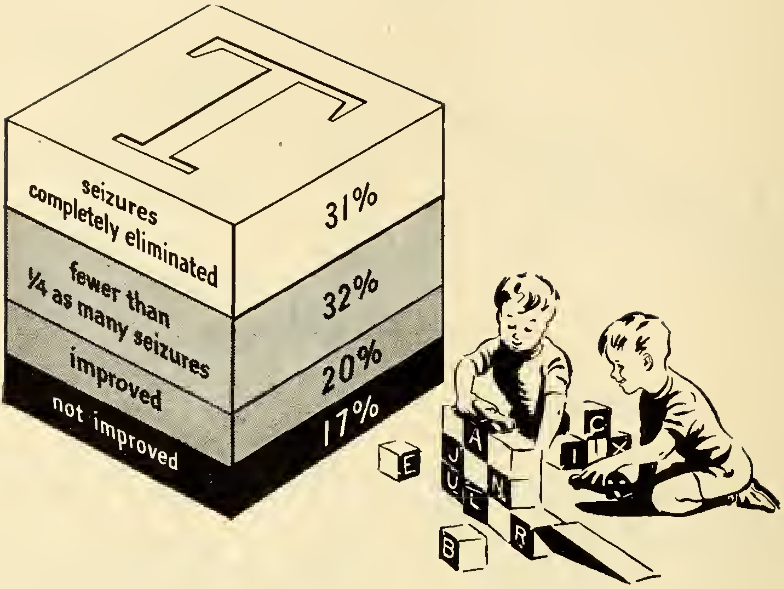

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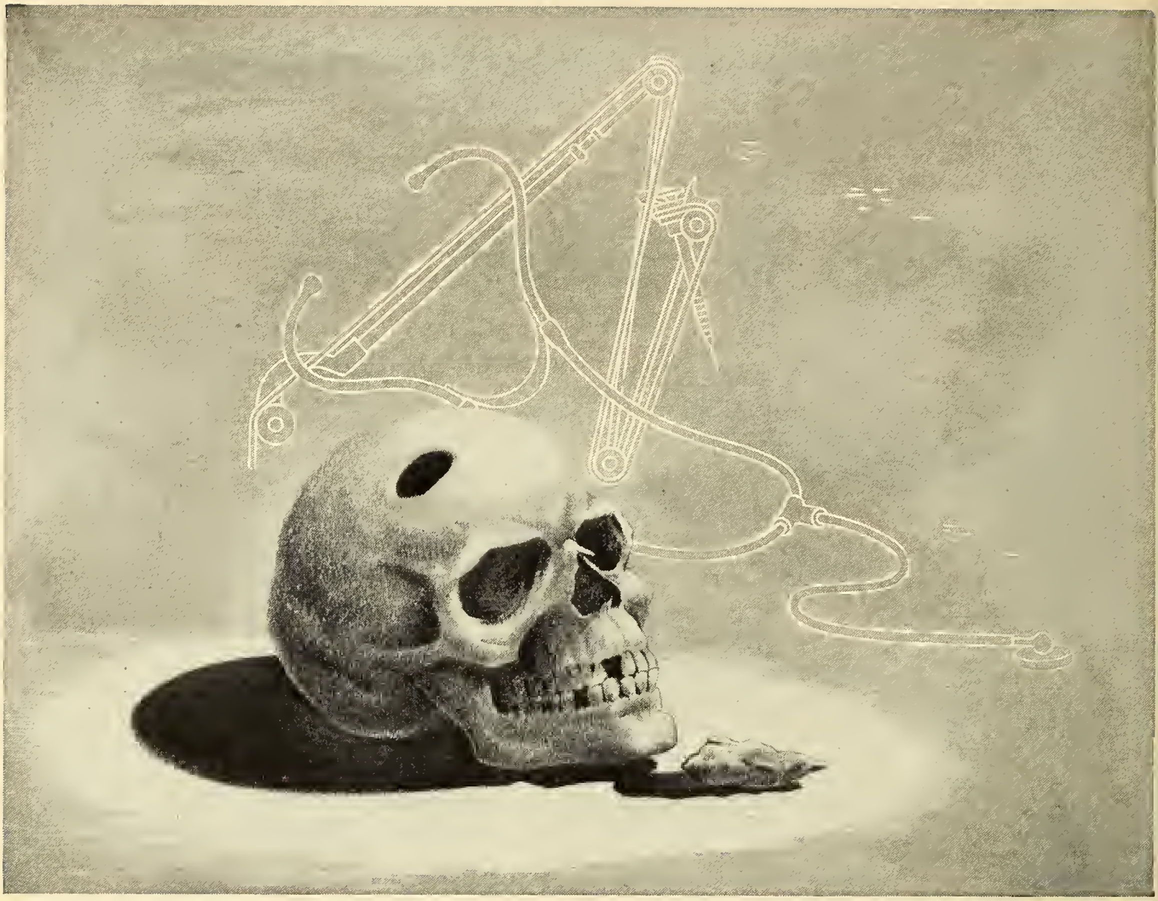

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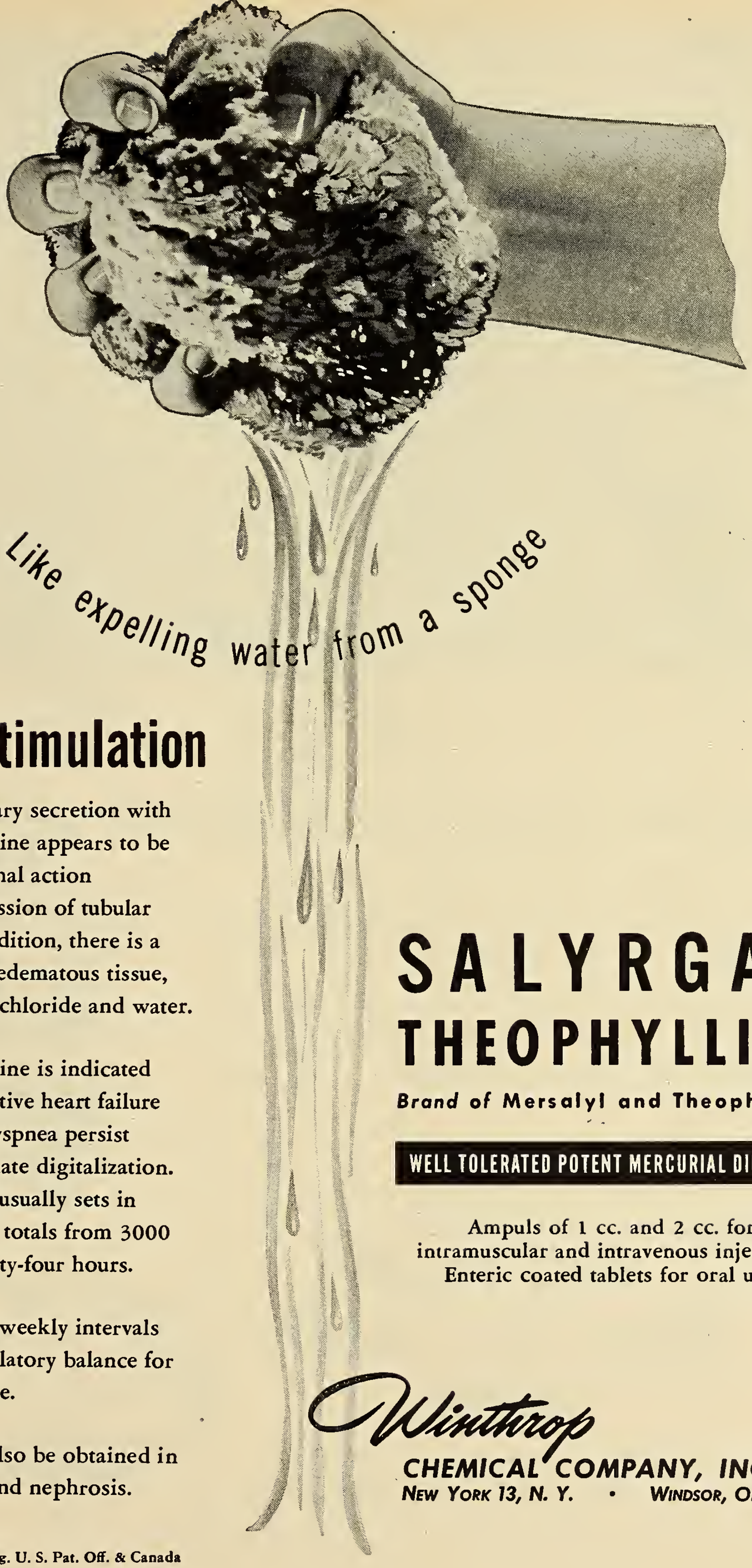
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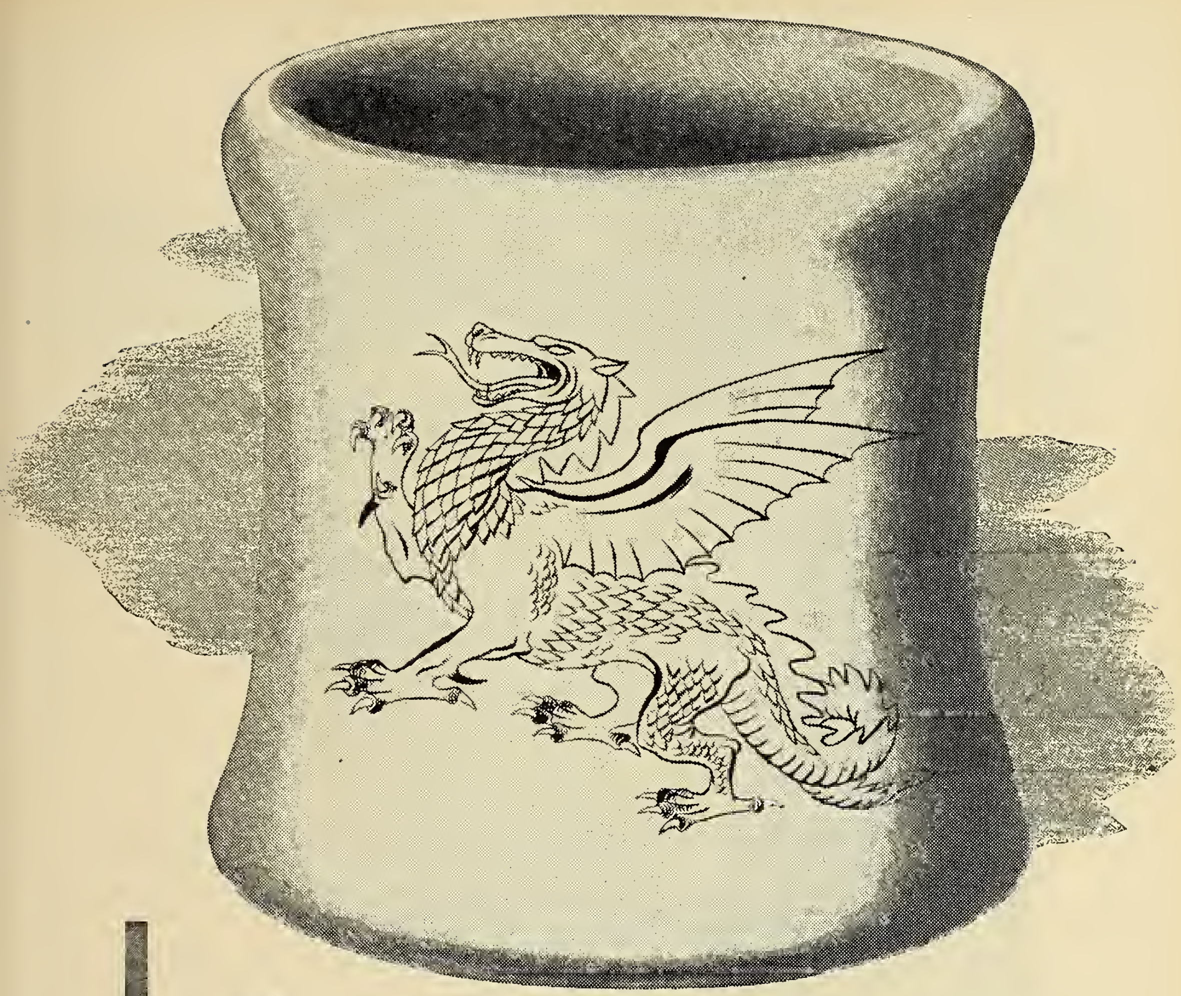

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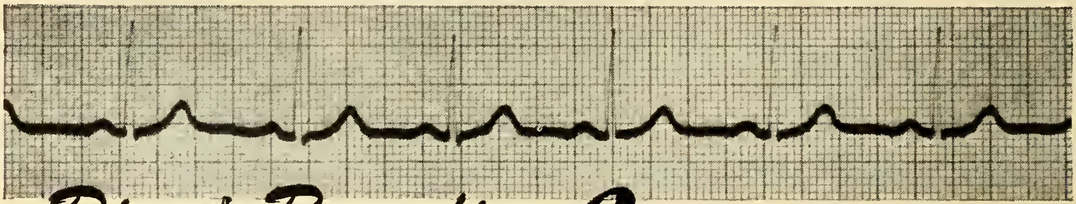

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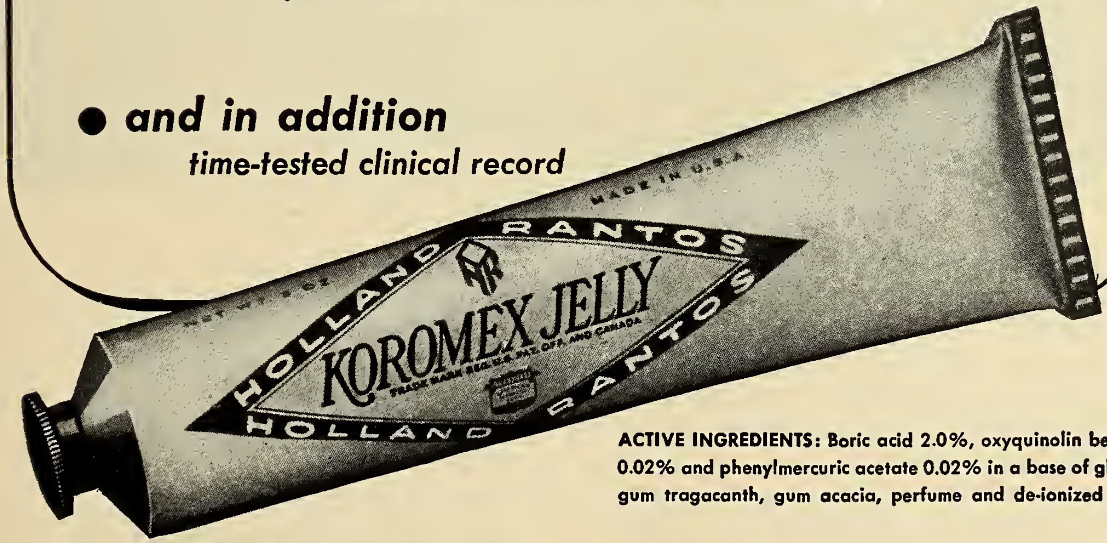
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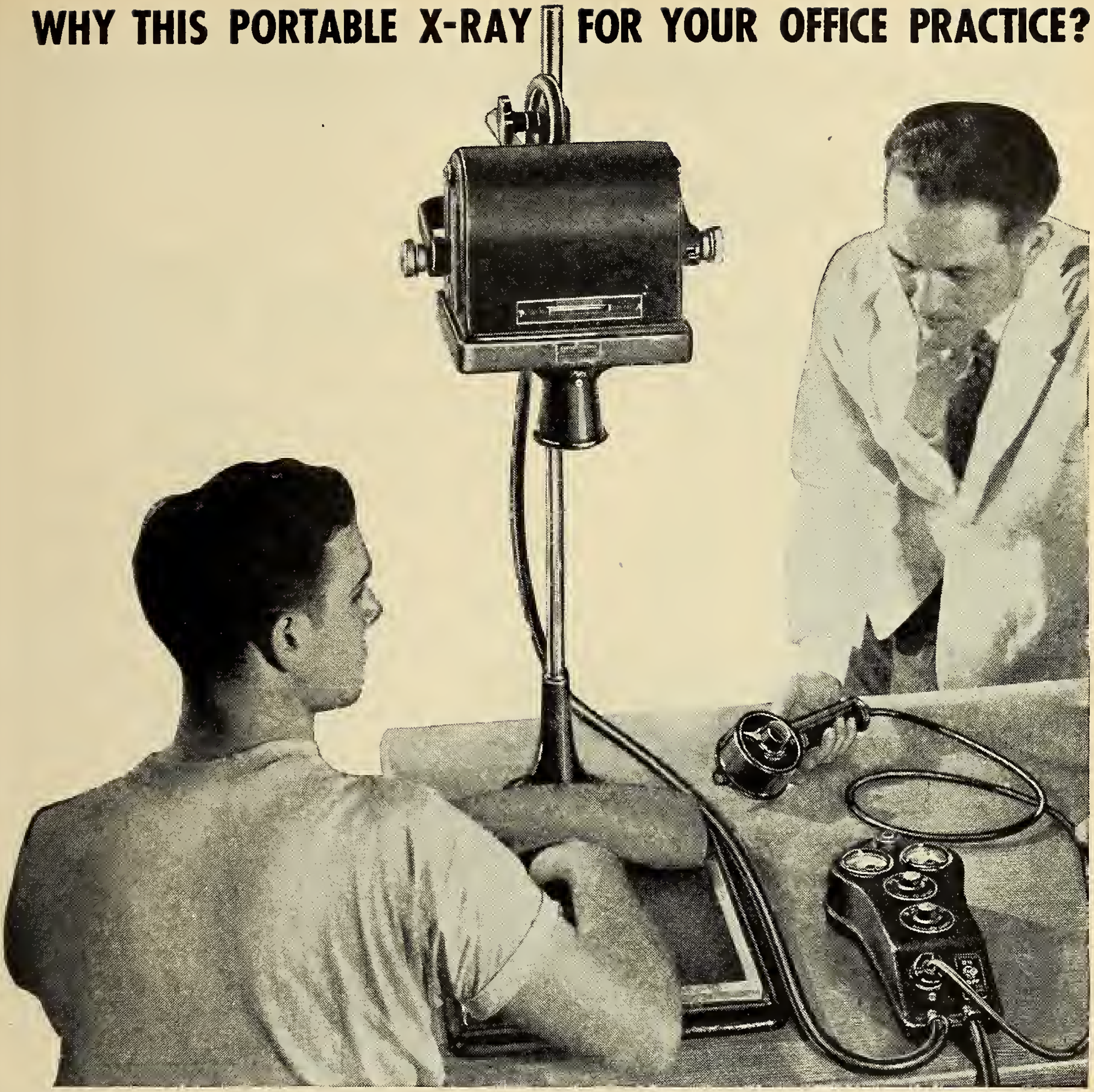

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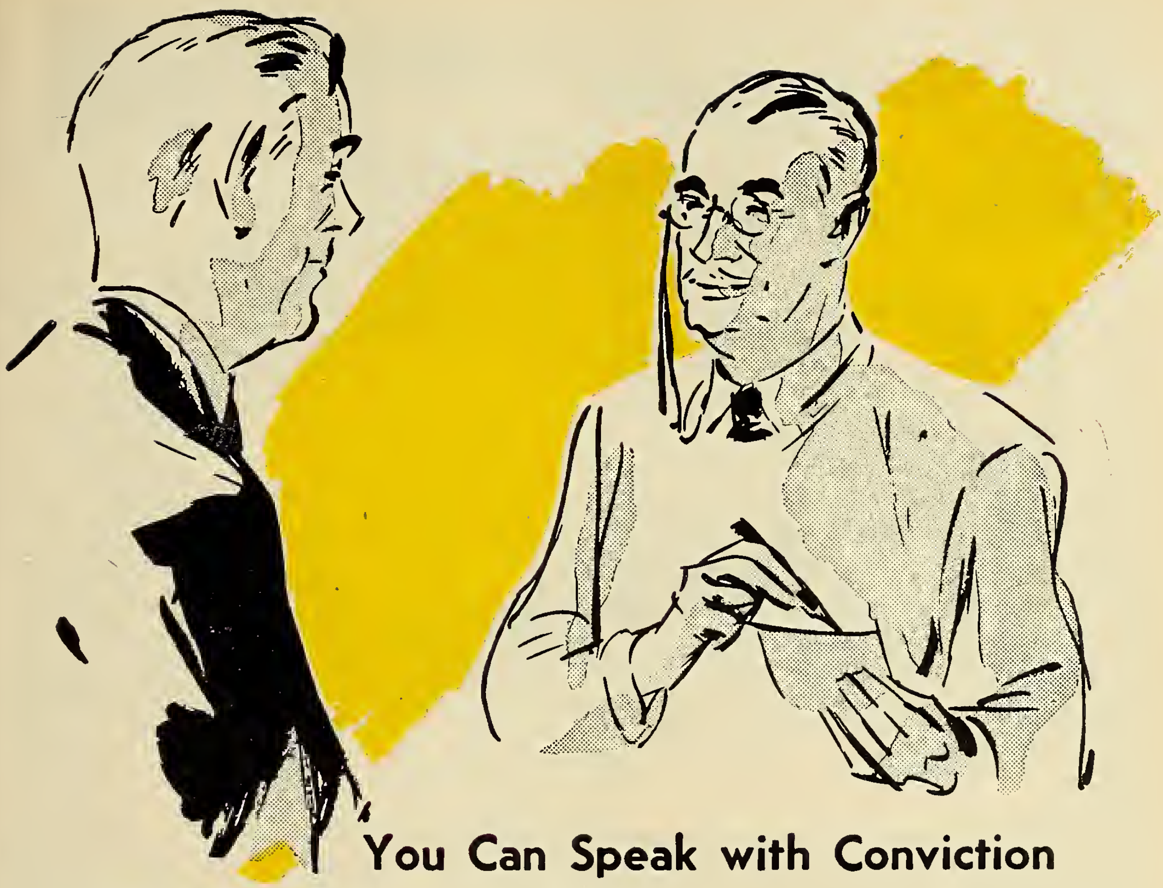

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[1] Human Fertility 10: 25 (Mar.) 1945.

[2] Warner, M. P.: J.A.M.A. 115: 279 (July 27) 1940.

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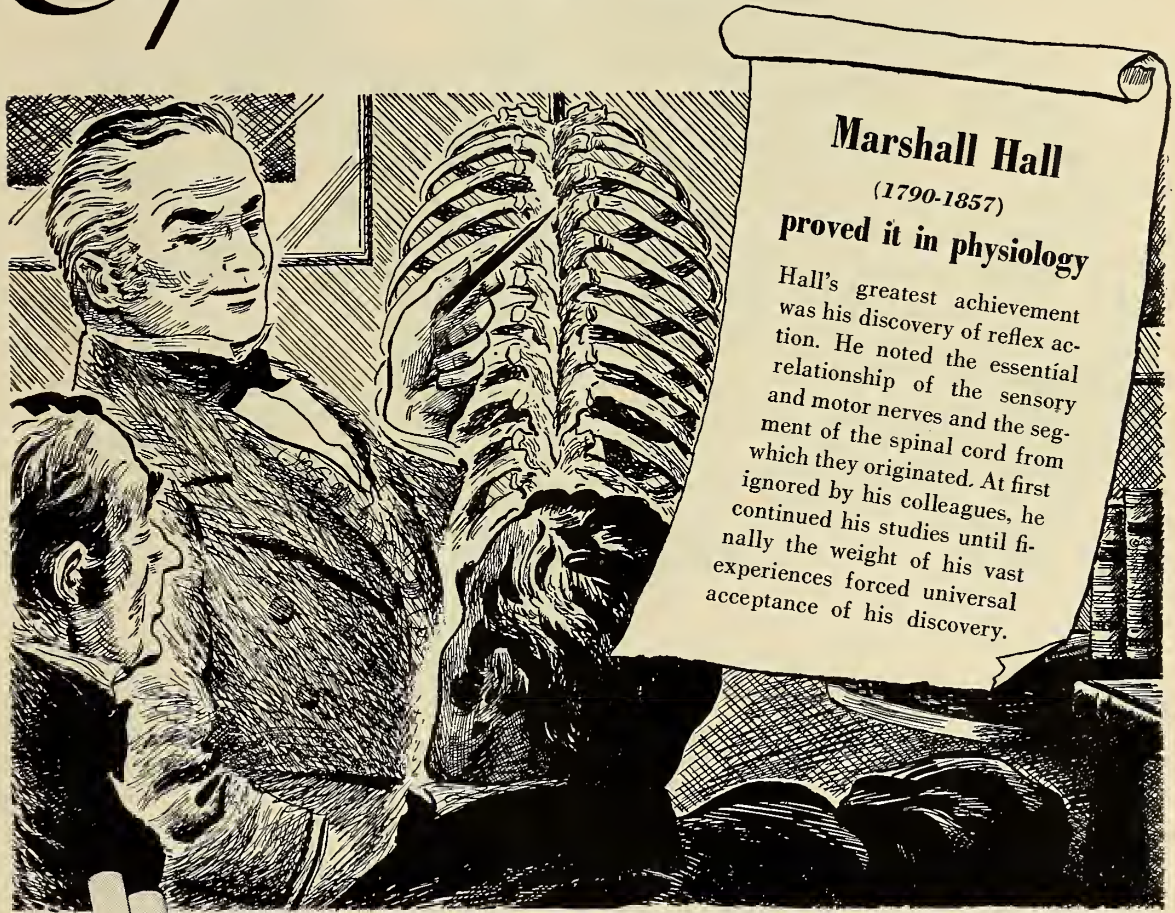

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(1790-1857)

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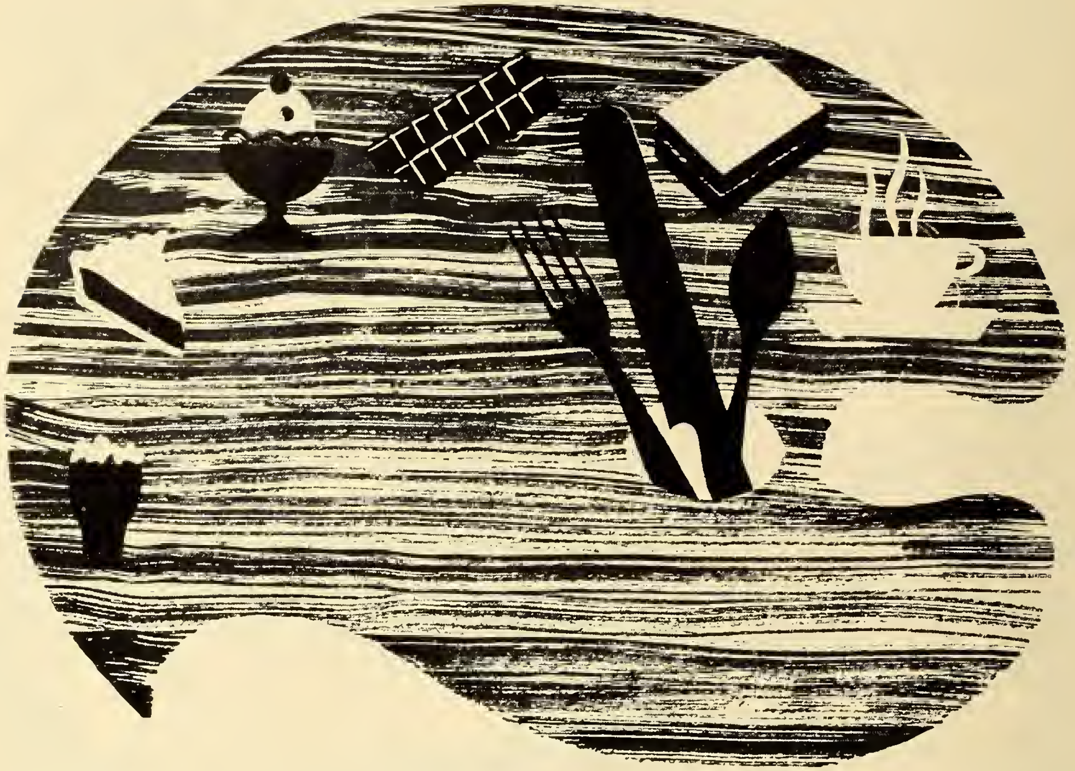

the art of eating

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[1] J. South Carolina M. Assn. 52:186 (July) 1946.

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Clinical Entity	Patients	Satisfactory	Questionable	No Benefit	% Showing Improvement
URTICARIA	766	692	16	58	90.3
VASOMOTOR RHINITIS	349	268	2	79	76.7
ECZEMA	128	79	7	42	61.7
HAY FEVER	425	350	36	39	82.4
ASTHMA	435	275	7	153	63.2
MIGRAINE	73	48	1	24	65.7
ANGIONEUROTIC EDEMA	54	46	1	7	85.2
ATOPIC DERMATITIS	66	42	1	23	63.6
PRURITUS	24	18		6	75.0
ERYTHEMA MULTIFORME	28	22		6	78.6
DERMOGRAPHIA	20	15		5	75.0
FOOD ALLERGY	37	32		5	86.5
CONTACT DERMATITIS	63	49		14	77.7
PHYSICAL ALLERGY	11	7		4	63.6
REACTIONS—ANTIBIOTIC	84	81	1	2	96.4
REACTIONS—DRUGS	46	42		4	91.3
REACTIONS—BIOLOGICS	12	12			100.0
DYSMENORRHEA*	44	38		6	86.3
TOTALS	2665	2116	72	478	79.39

*those cases due to histamine-induced spasm of smooth muscle.

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1. Irvin Abell, M.D., Chairman, Bd. of Regents, Am. Col. Surgeons; Am. Jl. of Nursing, March 1947.
2. A. E. Hedback, M.D., Editor, Modern Medicine; Jl.-Lancet, April 1947.

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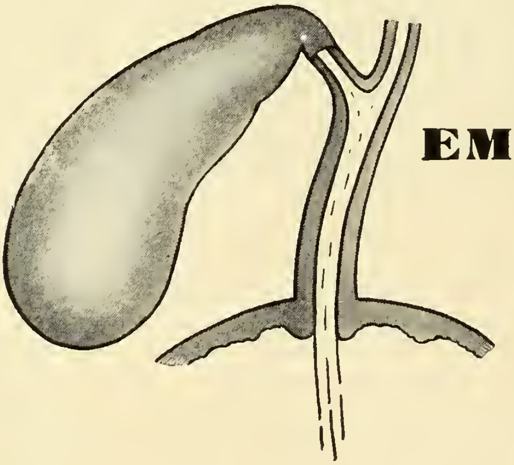

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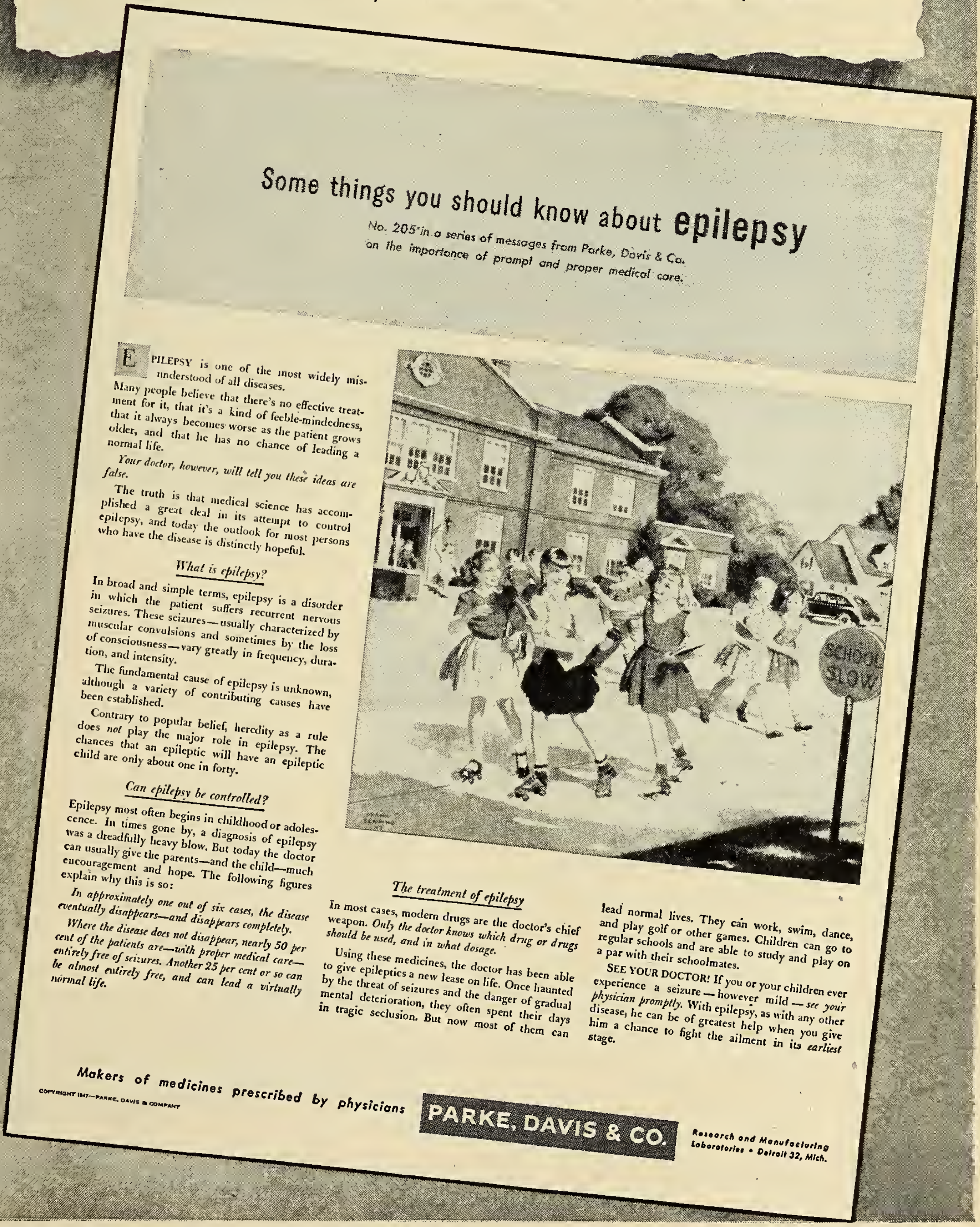
The educational message on Epilepsy, shown below, will appear in full color in LIFE and other national magazines . . . reaching an audience of more than 22 million people. This is No. 205 in the "See Your Doctor" series, published by Parke-Davis in behalf of the medical profession.


SCHOOL
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Some things you should know about epilepsy

No. 205 in a series of messages from Parke, Davis & Co. on the importance of prompt and proper medical care.

EPILEPSY is one of the most widely misunderstood of all diseases.

Many people believe that there's no effective treatment for it, that it's a kind of feeble-mindedness, that it always becomes worse as the patient grows older, and that he has no chance of leading a normal life.

Your doctor, however, will tell you these ideas are false.

The truth is that medical science has accomplished a great deal in its attempt to control epilepsy, and today the outlook for most persons who have the disease is distinctly hopeful.

What is epilepsy?

In broad and simple terms, epilepsy is a disorder in which the patient suffers recurrent nervous seizures. These seizures—usually characterized by muscular convulsions and sometimes by the loss of consciousness—vary greatly in frequency, duration, and intensity.

The fundamental cause of epilepsy is unknown, although a variety of contributing causes have been established.

Contrary to popular belief, heredity as a rule does *not* play the major role in epilepsy. The chances that an epileptic will have an epileptic child are only about one in forty.

Can epilepsy be controlled?

Epilepsy most often begins in childhood or adolescence. In times gone by, a diagnosis of epilepsy was a dreadfully heavy blow. But today the doctor can usually give the parents—and the child—much encouragement and hope. The following figures explain why this is so:

In approximately one out of six cases, the disease eventually disappears—and disappears completely.

Where the disease does not disappear, nearly 50 per cent of the patients are—with proper medical care—entirely free of seizures. Another 25 per cent or so can be almost entirely free, and can lead a virtually normal life.

The treatment of epilepsy

In most cases, modern drugs are the doctor's chief weapon. *Only the doctor knows which drug or drugs should be used, and in what dosage.*

Using these medicines, the doctor has been able to give epileptics a new lease on life. Once haunted by the threat of seizures and the danger of gradual mental deterioration, they often spent their days in tragic seclusion. But now most of them can lead normal lives. They can work, swim, dance, and play golf or other games. Children can go to regular schools and are able to study and play on a par with their schoolmates.

SEE YOUR DOCTOR! If you or your children ever experience a seizure—however mild—*see your physician promptly.* With epilepsy, as with any other disease, he can be of greatest help when you give him a chance to fight the ailment in its *earliest* stage.

Makers of medicines prescribed by physicians

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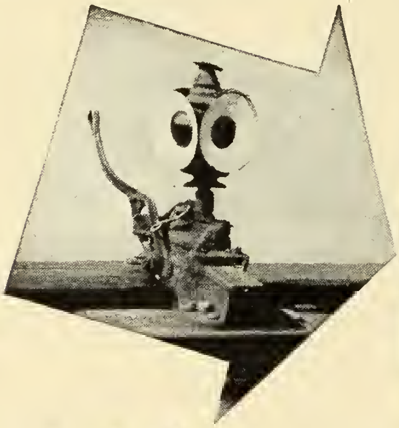

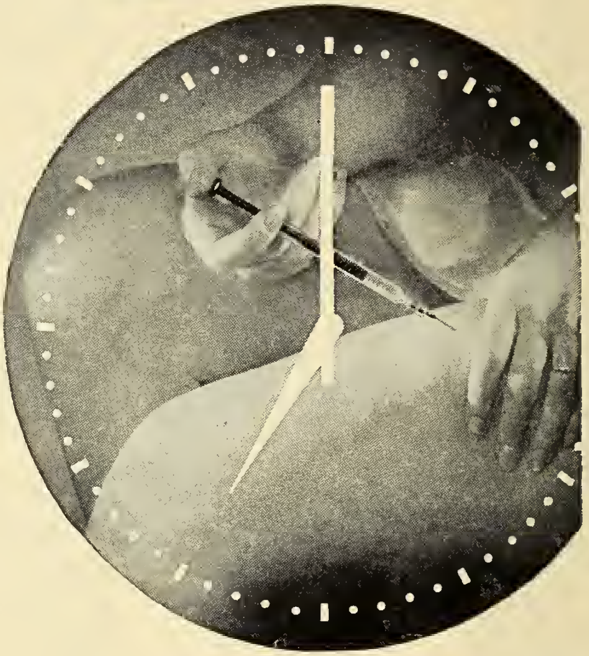

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 July, 1947 No. 7

ACUTE POLIOMYELITIS IN PREGNANCY

Report of Thirty Cases

MILTON E. BAKER, M.D., and ILENE GODFREY BAKER, R.N., B.S.
Minneapolis, Minnesota

During the Minnesota poliomyelitis epidemic in the summer of 1946, a total of 695 patients with acute poliomyelitis were admitted to the Minneapolis General Hospital on the contagion service between July 29 and September 21. Of this group, 115 were women between the ages of fifteen and forty-five years, and of this last group, thirty were pregnant. The ages of these pregnant women varied between seventeen and thirty-two years. Stages of gestation at the time of admission varied between six weeks and nine lunar months. Seven women were admitted during the first trimester of pregnancy, sixteen during the second trimester, and seven during the third trimester. Determination of the length of gestation was based on history, physical findings, and in case of abortion, on fetal and placental findings. There were seven cases of spontaneous abortion which occurred in patients with various types of poliomyelitis, and at various periods of gestation, as is shown in Table I. Three women had signs of threatened abortion, such as low abdominal cramping pain and vaginal spotting, but did not go on to abort. One woman with bulbar poliomyelitis, who aborted on the third day following admission, expired as a result of respiratory failure on the seventh day.

Four patients were delivered in the Minneapolis General Hospital during their admission for poliomyelitis. One of these was a spontaneous delivery, and two were low forceps deliveries. Two of these infants were apparently normal, but one of those delivered with low forceps had an occipital-frontal diameter of 36.5 centimeters. One living fetus of seven lunar months' gestation was surgically removed from the mother immediately after her death.

Twelve deliveries were carried out by private physicians after discharge of the mother from the Minneapolis General Hospital. Seven of these deliveries were spontaneous or by outlet forceps extraction, and the infants were normal and full-term. Patient No. 6 was delivered by cesarean section. This mother had had a previous difficult delivery, pelvic measurements of questionable adequacy, and a history of rickets. Patient No. 8 was delivered spontaneously of a 2,174 gram infant which was normal aside from prematurity, the length of gestation being thirty-six weeks. Patient No. 7 was delivered of an 1,812 gram infant by breech extraction. This last infant was a footling, and the length of gestation was approximately thirty-six weeks. The present diagnosis of this infant is osteogenesis imperfecta, and it has bilateral fractures of the femurs. Patient No. 19 was delivered spontaneously of a macerated stillborn fetus. The estimated length of gestation was thirty-six weeks, despite the small estimated weight of 900 to 1,350 grams and the relatively underdeveloped state of the fetus.

Patient No. 3 spent twelve days in a respirator, and on the fifth day of this period went into labor spontaneously and was delivered of a slightly macerated fetus by low forceps extraction. The fetus weighed 3,130 grams, measured 52 centimeters, crown-heel length, and was found to have a horseshoe kidney. During the mother's stay in the res-

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From the Department of Obstetrics and Gynecology, Minneapolis General Hospital.

TABLE I. PREGNANT NONPARALYTIC POLIOMYELITIS ADMISSIONS TO MINNEAPOLIS GENERAL HOSPITAL, JULY 29 TO SEPTEMBER 21, 1946

Case No.	Admission Date	Age	Parity	Admission Length of Gestation	Termination of Pregnancy	Poliomyelitis Status on March 15, 1947
1	8- 2-46	20	1	12 weeks	Normal spontaneous delivery 1-25-47	No residual paralysis
5	8- 2-46	21	1	36 weeks	Normal spontaneous delivery 8-31-46	No residual paralysis
6	8- 4-46	25	2	38 weeks	Cesarean section—contracted pelvis 8-24-46	No residual paralysis
7	8- 7-46	20	0	14 weeks	Breech extraction premature infant with osteogenesis imperfecta 12-25-46	No residual paralysis
8	8- 7-46	31	2	10 weeks	Normal spontaneous delivery	Generalized weakness and fatiguability
9	8- 9-46	19	1	12 weeks	Unknown	Unknown
10	8- 9-46	27	0	24 weeks	Normal spontaneous delivery	No residual paralysis
14	9-11-46	17	0	18 weeks	Unknown	Unknown
16	9-12-46	21	0	38 weeks	Brow:manual conversion to occiput posterior. Difficult low forceps extraction.	No residual paralysis
18	9- 7-46	17	0	20 weeks	Unknown	Unknown
21	8-11-46	19	0	26 weeks	Normal spontaneous delivery 12-2-46	Weakness of right leg and knee
22	8-11-46	20	0	18 weeks	Normal spontaneous delivery	No residual paralysis
23	8-14-46	31	1	20 weeks	Spontaneous abortion 8-15-46	No residual paralysis
26	8-27-46	32	1	18 weeks	Spontaneous abortion 9-1-46	No residual paralysis
27	8-14-46	16	0	8 weeks	Spontaneous abortion 8-19-46	No residual paralysis
28	8-10-46	20	?	24-26 weeks	Spontaneous abortion	No residual paralysis
29	9-10-46	17	?	20 weeks	Spontaneous abortion 9-14-46	No residual paralysis

TABLE II. PREGNANT BULBAR AND SPINAL PARALYTIC POLIOMYELITIS ADMISSIONS TO MINNEAPOLIS GENERAL HOSPITAL, JULY 29 TO SEPTEMBER 21, 1946

Case No.	Admission Date	Age	Parity	Admission Length of Gestation	Termination of Pregnancy	Poliomyelitis Status on March 15, 1947
2	8- 2-46	30	1	20 weeks	Death of mother 8-4-46	Bulbar and spinal paralytic types. Respiratory death.
3	7-29-46	20	1	36 weeks	Low forceps extraction of a slightly macerated fetus 8-12-46	Spinal paralytic type. Death 8-17-46. Probable pulmonary embolus
4	7-31-46	17	0	6 weeks	Spontaneous incomplete abortion 8-2-46	Bulbar type. Respiratory death 8-5-46
11	8-13-46	23	1	37 weeks	Normal spontaneous delivery 9-7-46	Spinal paralytic type. Minimal stiffness of legs 9-20-46
12	9- 7-46	22	0	18 weeks	Normal spontaneous delivery	Spinal paralytic type. No residual paralysis
13	9- 9-46	26	1	18 weeks	Normal spontaneous delivery	Bulbar type. No residual paralysis
15	8-30-46	17	0	20 weeks	Death of mother 8-31-46	Bulbar type. Respiratory death
17	8-11-46	25	1	20 weeks	Death of mother 8-11-46	Bulbar type. Respiratory death
19	9-21-46	28	3	12 weeks	Spontaneous delivery of a macerated premature fetus 3-4-47	Bulbar and spinal paralytic types. Difficulty holding body erect
20	9-21-46	26	0	10 weeks	Spontaneous incomplete abortion 9-24-46	Spinal paralytic type. Weakness of both legs 11-1-47
24	8-26-46	22	1	26 weeks	Outlet forceps extraction	Spinal paralytic type. Weakness of leg muscles, left side and back
25	8-28-46	29	3	30 weeks	Post-mortem hysterotomy 8-29-46. Baby expired 5 minutes after delivery	Bulbar type. Respiratory death.
30	8-30-46	24	1	38 weeks	Low forceps extraction	Spinal paralytic type. No residual paralysis

pirator, she had had many episodes of marked cyanosis, and on several occasions it was feared that she would not survive. Fetal heart tones were heard three days before delivery. Spontaneous onset of labor occurred at nine lunar months' gestation. After a labor of nine hours, low forceps were applied because the patient was having respiratory embarrassment. She had to be replaced in and out of the respirator several times during the delivery and repair of the episiotomy. After the delivery, the patient improved markedly. She was removed from the respirator and was transferred to a convalescent ward five days postpartum, where she continued to improve until the sixth day postpartum when she suddenly developed symptoms and signs of a pulmonary embolus and expired. Permission for autopsy was not granted.

Patient No. 25 was admitted with a diagnosis of bulbar poliomyelitis. On the day following admission, her condition was critical. She had been in a respirator more than twenty-four hours when she expired. The gestation was estimated to be at seven lunar months. The fetal heart was frequently heard up to one hour before death, at which time the patient became so cyanotic that it was considered necessary to keep her in the respirator continuously. After she had been pronounced dead by three doctors, an immediate post-mortem hysterotomy was performed and the infant delivered. The fetal heart continued for five minutes after delivery, and the infant took one gasp. Its weight was 1,812 grams and the crown-heel length was 43 centimeters.

Patient No. 16 was delivered by low forceps on September 12. She was a primigravida with normal pelvic measurements who was diagnosed as acute poliomyelitis, nonparalytic, and was considered a noninfectious patient at the time of delivery. Labor progressed normally until the late second stage when progress stopped with full dilatation of the cervix and the head at a 2+ station. Sterile vaginal examination revealed the presenting part to be the brow. The head was large despite the fact that abdominal examination had not revealed an abnormally large baby. A manual conversion to an occiput posterior position was carried out and the head delivered in this position by Tucker-McLane forceps. The extraction was difficult, but no apparent maternal injury resulted. The occipital-frontal circumference of the fetal head was 36.5 centimeters. The mother had a normal post-partum course except for relatively slow involution of the uterus, a finding noted in three poliomyelitis patients delivered at Minneapolis General Hospital.

The discharge diagnosis was nonparalytic acute poliomyelitis in seventeen patients, spinal paralytic in six patients, bulbar in five patients, and a combination of bulbar and spinal paralytic in two patients. In the series, there were six deaths. Of these, five occurred in patients with bulbar lesions, one of whom had a combination of bulbar and spinal involvement. One death occurred in a patient with spinal involvement only and was probably the result of a pulmonary embolus. This followed delivery of a macerated fetus of nine lunar months' gestation. An autopsy was carried out on only one of these patients. Death was due to respiratory failure. Autopsies were performed on the fetuses from patients No. 3 and No. 25. The spinal cords were soft but this could not be determined to be due to poliomyelitis.

Discussion

Most of the current literature dealing with the association of pregnancy and poliomyelitis seems to be concerned with these four major questions:

1. What effect has pregnancy on susceptibility to, or resistance against poliomyelitis?
2. What effect has pregnancy on the course of the disease in the poliomyelitis patient?
3. What effect has poliomyelitis on the course of the pregnancy?
4. Can the fetus contract poliomyelitis in utero from a diseased mother?

TABLE III. PERCENTAGE OF PREGNANT POLIO CASES TO CASES OF POLIO IN WOMEN OF CHILD-BEARING AGE

Author	Locality	Women of Approximately Child-bearing Age	Number of Cases in Pregnancy	Percentage of Pregnant Cases Among Women of Child-bearing Age
Aycock (Vaughn)	Detroit 1939	11	3	27.3
Brahdy and Lenarsky	New York	15	3	20.0
Fox and Sennett	Milwaukee 1943	6	4	66.7
Aycock	Duluth	8	1	12.5
Aycock	Dist. of Columbia 1944	18	4	22.0
Aycock (Waaler)	Bergen, Norway 1941	18	7	30.0
Aycock	Massachusetts 1945	54	10	18.5
Baker and Baker	Mpls. Gen. Hosp. 1946	115	30	26.0
	Total	245	62	25.3

There is, apparently, a diversity of opinion as to the frequency of the coincidental occurrence of poliomyelitis and pregnancy. Berg[4] states that "in the many years in which poliomyelitis has been a problem, doctors had remarked on the small incidence in women who were pregnant" (p. 148). McGoogan[13] likewise speaks of the occurrence of poliomyelitis in pregnancy as being rare. Aycock,[3] who believes pregnant women are more susceptible to poliomyelitis than nonpregnant women, has calculated the chance coincidence of the two conditions to be less than once for every 1,000 cases of poliomyelitis. Since thirty of the 695 cases of poliomyelitis admitted to the Minneapolis General Hospital were pregnant (a ratio of approximately 43 pregnancies per 1,000 cases of poliomyelitis), it would appear that factors other than chance were operating.

In the Detroit epidemic of 1939, Aycock[3] reports (from a personal communication from Vaughan) eleven cases of poliomyelitis in women over twenty-one years of age. Three of them (27.3 per cent) were pregnant. In the New York epidemic, as reported by Brahdy and Lenarsky,[7] fifteen patients were women over nineteen years of age; three of these (20 per cent) were pregnant. Fox and Sennett[8] summarized the above data, and added to them their own findings reported in Wisconsin in 1943: four pregnant poliomyelitis patients out of a total of six female cases (66.7 per cent). Totaling the three reports showed that 31.3 per cent of the female poliomyelitis patients in the child-bearing age were pregnant. Four additions to these reports were made by Aycock[2] in a later study: (1) Duluth, Minnesota, series, where one of eight female patients was pregnant; (2) District of Columbia, where in 1944, of eighteen female patients twenty to forty-five years of age, four (22 per cent) were pregnant; (3) Waaler's report of twenty-three female patients over eighteen years of age (Bergen, Norway, 1941), seven of whom (30 per cent) were pregnant, and (4) Massachusetts, 1945, where ten out of fifty-four female patients between the ages of fifteen and forty-five were found to be pregnant. To these reports, we add those for the Minneapolis General Hospital during the two-month period covered by this study. Of 115 cases of poliomyelitis in women fifteen to forty-five years of age, 30 (26 per cent) were pregnant. Combining these findings with those of the above-mentioned investigators, it is found that 25.3 per cent of the women in the child-bearing age in these eight studies were pregnant. (These reports are reasonably comparable, although the definition of child-bearing age differs slightly in each report.) According to calculations based on data obtained from the Statistical Abstract of the United States Census Bureau for 1946,[16] approximately 6 per cent of the female population of child-bearing age are pregnant at any one time.* Since the percentage of pregnant women among female poliomyelitis patients of the child-bearing age (as determined in these studies) is more than four times that of pregnant women among the corresponding group of the population at large, it would appear that pregnant women are more susceptible to poliomyelitis than nonpregnant women.

Some investigators find evidence to support the conclusion that the pregnant female is somewhat more resistant to poliomyelitis during the first trimester of pregnancy. The International Committee for the Study of Infantile Paralysis[11] reports that "there is a general impression that, although the disease is likely to occur in the late months of pregnancy, it does not occur in the early months. We have met with no instances of the disease occurring in early pregnancy" (p. 416). Weaver and Steiner,[17] using pregnant cotton rats experimentally inoculated with poliomyelitis virus, found rats in the first trimester of pregnancy were more resistant than those in more advanced stages of pregnancy, but all pregnant rats were somewhat more resistant than virgin rats. Brahdy and Lenarsky[7] conclude from their study of three patients and a review of eight cases from literature, that poliomyelitis can occur in early pregnancy as well as in late. Aycock,[17] in a survey of seventy-five pregnant poliomyelitis cases from the literature and from his personal records, found 17.1 per cent of these infections to have occurred in the first trimester of pregnancy, 34.3 per cent in the second, and 48.8 per cent in the last. He expresses the belief in a later study,[2] however, that "there is no indication of a tendency of the disease to occur at any specific period of pregnancy" and that the apparent dearth of infections in early pregnancy is probably due to "discrepancy in the data." Of the thirty pregnant women with poliomyelitis at the Minneapolis General Hospital, 23.3 per cent were in the first trimester, 53.3 per cent in the second, and 23.3 per cent in the last. This would tend to support Aycock's views.

Pregnancy has little influence on the course of poliomyelitis or the extent of paralysis in the mother, according to Harmon and Hoyne.[10] McGoogan,[13] on the other hand, believes that pregnancy may be a factor in the severity and outcome of poliomyelitis, in that such complications as cystitis and respiratory paralysis are aggravated by pregnancy, and that recovery seems to occur more rapidly after its termination. Brahdy and Lenarsky[7] imply that respiratory paralysis is the only indication for the termination of pregnancy in a patient with poliomyelitis. Gillespie[9] reports a patient who improved markedly after a cesarean section was performed in a respirator. A similar patient, described by Spishakoff et al,[15] appeared to be so seriously ill that post-mortem cesarean was considered. However, after spontaneous delivery occurred, the patient's respirations improved immediately, she became afebrile within twenty-four hours, and was removed from the respirator a week later. They offer this as the only reported case of full-term pregnancy complicated by ascending poliomyelitis and respiratory paralysis. To this, we can add case No. 3 of our study, as described above, which closely resembles it. Due to the capricious nature of the disease itself, however, it is difficult to determine how much of its course can be attributed to the influence of pregnancy or to its termination. The present study showed that 20 per cent of the pregnant poliomyelitis patients expired, while 14.1 per cent of the nonpregnant female patients of child-bearing age expired. Although this is too slight a difference to warrant any conclusions as to the influence of pregnancy on the prognosis of the patient with poliomyelitis, it is, perhaps, worthy of mention.

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*This figure was computed by taking 9/12 (period of gestation) of the ratio of births during 1944 to female population fifteen to forty-five years of age for that same year.

TABLE IV. TERMINATION OF PREGNANCIES IN PREGNANT POLIO PATIENTS

Author	Total No. of Cases	Death of Mother Before Delivery	Normal Term	Low Forceps	Mid Forceps	Breech	Premature	Aborted	Cesarean	Unknown
Blair et al	6	1	3				1	1		
Brahdy and Lenarsky	3		1				1	Therapeutic 1		
Harmen and Hoyne	2		1				1			
Kleinberg and Horwitz	28		15	6	2	2		1	2	
McGoogan	3		2				1			
Fox and Sennett	3	1	1			1				
Spiskoff et al	1						1			
Gillespie	1								1	
Morrow and Luria	1		1							
Baker and Baker	30	4	8	4		1*	3	7	1	3
Total	78	6	32	10	2	4	8	10	4	3

* This infant was also premature and is listed again in the "premature" column.

Will the pregnant poliomyelitis patient go to term and if so, what are her chances for a normal delivery? The various investigators are quite well agreed on the answer to this question. Blair et al[6] found that deliveries were normal despite paralysis. Brahdy and Lenarsky[7] take the stand that uncomplicated poliomyelitis (exclusive of respiratory paralysis) is no indication for interruption of pregnancy. Harmon and Hoyne[10] conclude that "a normal issue assisted by a minimum of operative intervention which is of the same type as required in nonparalyzed gravid patients" may be expected. Kleinberg and Horwitz[12] summarize sixteen cases from the literature and thirteen hitherto unreported cases and conclude that "notwithstanding severe paralysis involving the abdominal and extremity muscles, and occurring during gestation, a normal course of pregnancy and labor, and normal offspring may be anticipated." They further state that there is the same proportion of complications and of indications for operative interference as for those who do not have poliomyelitis, and that cesarean section is not indicated because of poliomyelitis alone. McGoogan[13] states that poliomyelitis has no effect on pregnancy and that normal spontaneous delivery may be expected. Fox and Sennett[8] also observed that poliomyelitis in the mother did not hamper spontaneous delivery. Spishakoff et al,[15] on the other hand, attribute their case of premature delivery to poliomyelitis. Gillespie[9] likewise describes a case in which cesarean section was performed after a three-day labor left the patient exhausted and the maternal outlook grave. (The cases reported by these authors are tabulated in Table IV. The authors reporting the therapeutic abortion and one of the therapeutic cesarean sections, respectively, seemed to feel that the procedures had not actually been indicated.) Our study showed that 30.4 per cent of the pregnant poliomyelitis patients aborted at periods varying from six weeks to six months. According to Allen,[1] 18 per cent of all pregnant women abort. This would seem to indicate that pregnant poliomyelitis patients have an excessive tendency to abort. Of the nineteen surviving poliomyelitis patients who did not abort, we were able to follow sixteen. Of these, twelve had normal spontaneous deliveries, or low forceps extractions at term. There were one cesarean section and three premature deliveries (one of these being a breech extraction). There was no evidence that the effects of poliomyelitis influenced the type of delivery in any of these patients, with the exception of one low forceps extraction on a patient in a respirator.

There is no convincing evidence that intrauterine transmission of poliomyelitis occurs. Weaver and Steiner[17] examined records from the literature, of six cases of alleged prenatal infection of the fetus with anterior poliomyelitis and expressed the opinion that the data did not justify such a conclusion. Bierman and Piszczek[5] report a case of poliomyelitis in an eleven-day-old infant, but acknowledge the possibility of other avenues of infection, including postnatal contact with the mother who expired on the fourth postpartum day with bulbar poliomyelitis. Fox and Sennett,[8] after examining two normal offspring from mothers with poliomyelitis and one fetus in a dead mother, concluded that poliomyelitis in the mother did not affect the fetus. Blair et al[6] found no evidence of the infection occurring *in utero* in four infants examined by them. Brahdy and Lenarsky[7] could find no effect on the newborn which could be attributed to poliomyelitis in the mother. According to McGoogan,[13] "intra-uterine transmission, if it occurs, is rare." He seems to imply that it can occur, but admits that the evidence is inconclusive. Harmon and Hoyne[10] also speak of it as "rare." They present one case in which inoculation of a Macacus rhesus monkey with preserved fetal spinal cord failed to produce clinical or microscopic evidence of poliomyelitis. Kleinberg and Horwitz[12] have been quoted above as believing that normal offspring may be expected from mothers who have had poliomyelitis during their pregnancy. None of the offspring of the pregnant poliomyelitis patients who make up the material of this study has shown any evidence of having acquired the infection. Autopsies on the one infant and on one of the stillborn were inconclusive as to poliomyelitis, but showed that death of the infant was due to anoxemia. There was no autopsy on the other stillborn which was a premature infant.

TABLE V. INFANTS BORN OF MOTHERS WHO HAVE HAD ACUTE POLIOMYELITIS DURING THE PREGNANCY

Author	Number of Infants	Normal	Died	Polio	Stillbirth	Abnormal	Unknown
Biermann and Piszczek	1			1			
Fox and Sennett	2	2					
Blair et al	5	4	1				
Brahdy and Lenarsky	2	2					
McGoogan	3	2	1 (prem.)				
Harmon and Hoyne	2	1			1 No evidence of polio		
Kleinberg and Horwitz Observed	12	12					
Kleinberg and Horwitz Literature	15	12	1 (prem.)		1 (prem.)	1 (Bilateral club feet)	
Gillespie	1		1 (prem.)				
Spiskakoff	1	1 (prem.)					
Baker and Baker	20	1 (prem.) 13	1 (prem.)		2 (prem.)	1 (Osteogenesis imperfecta)	3
Total	64	49	5	1	4	2	3

Summary

During the period of July 29 to September 21, 1946, 695 cases of acute anterior poliomyelitis were admitted to the Minneapolis General Hospital. Of this number, 115 were females in the child-bearing age of fifteen to forty-five years, and of these, thirty were pregnant. There were seven in the first trimester of pregnancy, seventeen in the second, and seven in the third. Fifteen live babies had been delivered by March 15, 1947. Eight of these deliveries were spontaneous, and the infants were full-term. One was a cesarean section; two were simple low forceps extractions; one was carried out by conversion of a brow to an occiput posterior position and a low forceps extraction; one was a breech extraction of a premature infant with osteogenesis imperfecta; one was a normal spontaneous delivery of a premature infant; and one was a postmortem hysterotomy which produced an infant of seven lunar months' gestation which lived only five minutes. Seven spontaneous abortions and six deaths occurred among the thirty pregnant patients.

Conclusions

1. Acute anterior poliomyelitis occurs in all three trimesters of pregnancy. It occurs in the pregnant woman more frequently than can be attributed to mere chance.

2. In general, pregnancy has little influence on the course of poliomyelitis or the extent of paralysis.

3. There is a relatively high percentage of abortion (30.4 per cent) among pregnant patients with poliomyelitis.

4. This study produced no evidence to show that the fetus can or cannot contract poliomyelitis *in utero*.

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A REVIEW OF 174 CASES OF CANCER WITH NECROPSIES

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THIS review of 174 cancer deaths with necropsies over a five-year period from 1940 through 1944 is divided into two parts. The first section is a broad statistical study as to incidence with a comparison to national and state figures. The second part consists of a more detailed discussion with reference to the various more common sites of cancer and their signs and symptoms.

Statistical Review

The United States Census Bureau for 1944[7] revealed that 171,171 (12.1 per cent) of 1,411-338 deaths were due to cancer. In Minnesota the figures released by the Minnesota Department of Health for 1945[7] showed 27,336 deaths from all causes, with 4,096 deaths (14.9 per cent) due to cancer.

TABLE I. ADMISSION MALIGNANCY DEATH RATE

Year	Admissions*	Number of Cancer Deaths**	Necropsy Number	Malignancy Percentage
1940	6,786	27	22	.72
1941	6,805	42	36	1.10
1942	7,553	49	49	1.30
1943	8,155	40	31	.87
1944	8,590	40	36	.89
Total	37,889	198	174	.97

* Admissions exclusive of newborns.
** Deaths due to cancer without confirmation of necropsy.

At St. Luke's Hospital, Duluth, Minnesota, 0.97 per cent of all admissions (Table I) over a five-year period resulted in death by cancer. The important role which cancer deaths play in our hospitals is further illustrated by Table II in which 16.49 per cent, or one-sixth, of the necropsies performed over the five-year period were diagnosed cancer.

In Minnesota deaths from cancer in 1945,[7] among residents, showed a sex distribution of 1,942 (51.3 per cent) men and 1,843 (48.7 per cent) women. These were reversed in the nation as a whole, with 89,781 (52.4 per cent) women and 81,390 (47.6 per cent) men for the year of 1944.[7] Over a five-year period the cases diagnosed as cancer on necropsy at this hospital totaled 101 (58 per cent) men and 73 (41.9 per cent) women (Table III).

TABLE II. PERCENTAGE OF MALIGNANCIES IN NECROPSIES

Year	Number of Autopsies	Number of Malignancies	Percentage
1940	234	22	9.4
1941	251	36	14.3
1942	185	49	26.4
1943	183	31	16.9
1944	202	36	17.8
Total	1055	174	16.49

TABLE III. SEX DISTRIBUTION OF MALIGNANCIES ON NECROPSY

Year	Number of Males	Percentage	Number of Females	Percentage
1940	10	45.5	12	54.5
1941	24	66.6	12	33.3
1942	25	51.0	24	48.9
1943	17	54.8	14	45.0
1944	25	69.4	11	30.6
Total	101	58	73	41.9

TABLE IV. CANCER DEATHS BY AGE

Age Group	Number of Malignancies	Percentage
5–10	2	1.10
11–20	3	1.70
21–30	1	.57
31–40	8	4.59
41–50	21	12.06
51–60	47	27.00
61–70	38	21.80
71–80	44	25.00
81–90	9	5.10
91–100	1	.57

The age-specific death rate per 100,000 estimated population in the United States in 1940[5] bears out the fact that cancer becomes an increasing menace from the fifth decade on. In the State of Minnesota 3,059 (80.8 per cent) of a total of 3,785 deaths from cancer among residents in 1945 occurred in the age group between forty to eighty years. In our series 150 (86 per cent) of the cancer deaths (Table IV) occurred between the ages of forty-one to eighty years. The percentage of people in the nation reaching the cancer age group, between forty-five to sixty-four years, has increased from 11.9 per cent in 1870 to 19.7 per cent in 1940 and from 3.0 per cent to 6.8 per cent in the age group of sixty-five and over dur-

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Clerical assistance by Miss Faith A. Gugler.

TABLE V. CANCER MORTALITY IN TERMS OF ORGANS PRIMARILY AFFECTED

System	Five Year Total	Percentage
Digestive		
Esophagus	3	1.70
Stomach	27	15.50
Transverse colon	5	2.80
Ascending colon	2	1.14
Cecum	3	1.70
Descending colon	2	1.14
Sigmoid	8	4.58
Recto-sigmoid	3	1.70
Rectum	8	4.58
Liver	6	3.44
Gall bladder	3	1.70
Pancreas	10	5.60
Total	80	45.90
Reproductive		
Breast	12	6.89
Ovaries	5	2.80
Cervix	7	4.59
Uterus	5	2.80
Testes	1	.57
Total	30	17.00
Genito-urinary		
Kidney	3	1.70
Bladder	5	2 80
Prostate	18	10.33
Total	26	14.90
Respiratory		
Bronchus	10	5.60
Nasopharynx	2	1.14
Mastoid	1	.57
Total	13	7.40
Lymphatic and Bone Marrow		
Lymphosarcoma	8	4 58
Lymphatic leukemia	4	2.29
Myelogenous leukemia	4	2.29
Hodgkins	1	.57
Multiple myeloma	2	1.14
Total	19	10.90
Nervous		
Brain	1	57
Cardiovascular		
Heart	1	.57
Endocrine		
Thyroid	1	.57
Adrenal cortex	1	.57
Miscellaneous	2	1.14

TABLE VI. MEAN AGE WITH REFERENCE TO ORGANS AND SYSTEMS

Organ or System	Mean Age in Years
Kidney	49.6
Lymphatic and bone marrow	52.3
Cervix	54.2
Ovary	54.6
Uterus	58.0
Breast	59.0
Lung	59.9
Pancreas, gall bladder, and liver	63.4
Stomach	63.5
Esophagus	64.0
Colon	66.0
Urinary bladder	71.4
Prostate	71.6

TABLE VII. TIME INTERVAL FROM ONSET OF SYMPTOMS TO DEATH

System	Time in Months
Digestive	
Esophagus and stomach	11.7
Colon and rectum	7.2
Pancreas	5.5
Gall bladder	2.0
Liver	3.5
Reproductive	
Uterus	33.1
Ovary	30.9
Breast	29.5
Cervix	20.4
Testes	3.2
Genito-urinary	
Prostate	22.5
Bladder	21.8
Kidney	4.9
Respiratory	
Bronchogenic	5.6
Lymphatic and Bone Marrow	
Multiple myeloma	34.2
Lymphosarcoma	6.5
Lymphatic leukemia	5.0
Hodgkins	4.7
Myelogenous leukemia	3.7

ing the same period of time.[5] The increase in longevity and the actual increase in population does not entirely account for the higher national incidence.

The proportion of deaths from cancer by age groups is 0.4 per cent under the age of ten, increasing to 14.7 per cent in the age group between fifty to seventy, and dropping to 4.8 per cent in the age group of ninety and over.[4] In our series the percentage varied from 1.10 per cent in the age group under ten to 27 per cent in the age group between fifty-one and sixty, and dropping to 0.57 per cent in the age group of ninety and over (Table IV).

In spite of the small number of cases, the five-year total percentage of cancer mortality at this hospital in terms of organs primarily affected (Table V) closely parallels the figures of the United States Census of 1942.[5] An attempt to correlate our figures with those of the State of Minnesota for 1945 is rather difficult owing to the difference of classification.

The percentage frequency with reference to primary sites in each sex is illustrated by Figure 1. The percentages corroborate the national sex specific cancer mortality of 1942[5] in that it is generally higher in males, except in those sites due to difference in physiology and anatomy. In our series, the percentage of malignancies of the lymphatic system and bone marrow were also higher in males. The mean age with reference to organs or systems varied from 49.6 years in cancer of the kidney to 71.6 years in cancer of the prostate (Table VI).

The time interval from the onset of symptoms to death is tabulated in Table VII with shortest time interval being in the digestive, respiratory, and lymphatic systems and also in the bone marrow. One plausible explanation may be the silent features of malignancies in these sites plus the comparatively large surface over which to spread.

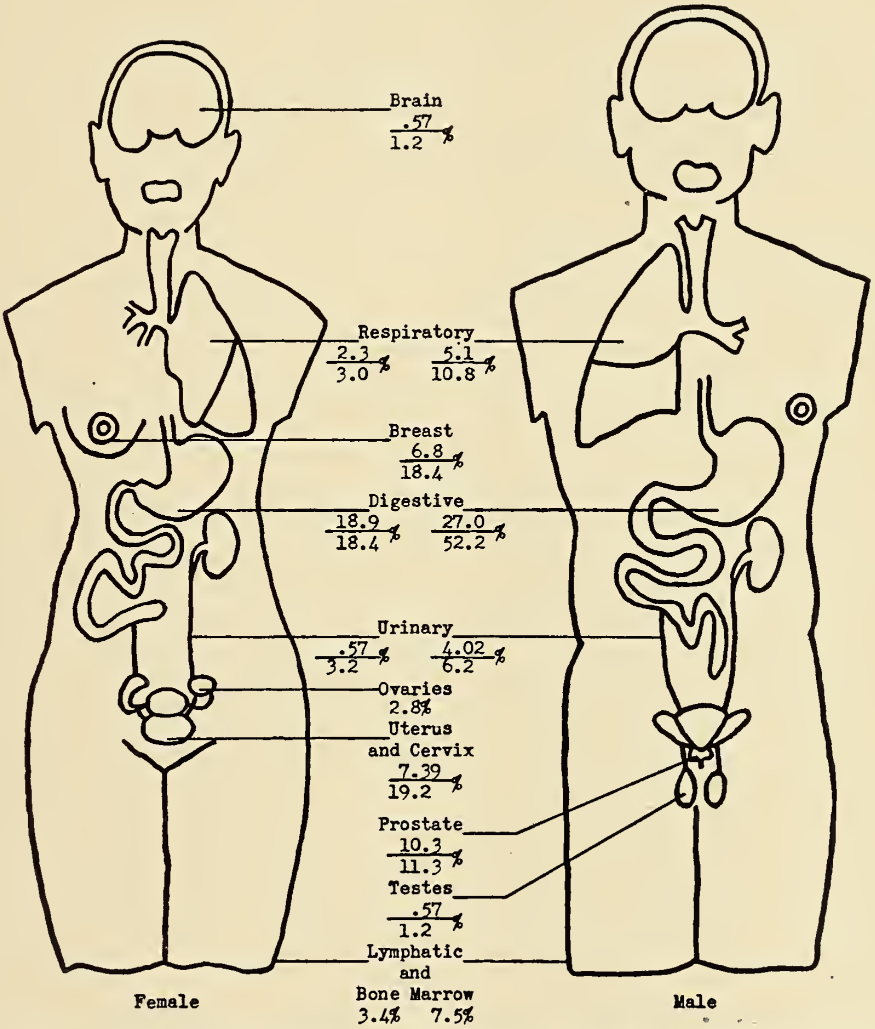
Brain
.57
1.2 %
Respiratory
2.3
3.0 %
5.1
10.8 %
Breast
6.8
18.4 %
Digestive
18.9
18.4 %
27.0
52.2 %
Urinary
.57
3.2 %
4.02
6.2 %
Ovaries
2.8%
Uterus
and Cervix
7.39
19.2 %
Prostate
10.3
11.3 %
Testes
.57
1.2 %
Lymphatic
and
Bone Marrow
3.4% 7.5%
Female
Male

Fig. 1. The percentage frequency of primary cancer sites in each sex. The figures below the lines represent the national percentage in 1942. The figures above the lines represent the percentage in the authors' series. The diagram is from the *Minnesota Cancer Bulletin,* volume 1.

Review of Clinical Manifestations

The systemic effect of emaciation as evidenced by weight loss of 15 pounds or more was encountered in a total of sixty-seven cases (38.5 per cent), of which forty-four (65.6 per cent) occurred with malignancies of the digestive system and twenty-three (34.3 per cent) with malignancies in other sites (Table VIII). The question as to whether emaciation is due to impaired metabolism or inanition is debatable.

The causes of anemia in malignancies can be summarized under blood loss, absorption of toxic products, and deficient nutrition. Approximately one-half of the cases of moderate and one-third of the cases of severe anemia occurred with

TABLE VIII. WEIGHT LOSS

Total Number	67
Percentage	38.5%
Number with gastrointestinal malignancies	44
Percentage	65.6%
Number with malignancies in other sites	23
Percentage	34.3%

TABLE IX. ANEMIA

Moderate*	
Total Number	58
Percentage	33.3%
Number with gastrointestinal malignancies	30
Percentage	51.7%
Severe**	
Total Number	12
Percentage	6.9%
Number with gastrointestinal malignancies	4
Percentage	33.3%

*Hemoglobin below 10.5 grams and red cell count below 3,500,000
**Hemoglobin below 6.5 grams and red cell count below 2,000,000

TABLE X. STOMACH—TWENTY-SEVEN CASES

Symptoms	Number	Percentage
Anorexia	24	88.0
Chronic dyspepsia	21	77.7
Nausea	19	70.0
Loss of weight	16	59.0
Vomiting	13	47.7
Achylia	9*	
Occult blood in stool	8	29.6
Anemia	8	29.6
Weakness	7	25.9
Hematemesis	5	18.5
Palpable epigastric mass	4	14.8
Dysphagia	2	7.4

*Gastric analysis done only in nine cases

TABLE XI. RIGHT HALF OF COLON—TEN CASES

Symptoms	Number	Percentage
Anemia	8	80
Loss of weight	6	60
Vomiting	4	40
Nausea	4	40
Anorexia	3	30
Fullness	3	30

malignancies of the digestive tract (Table IX). This may strengthen the theory of hidden, recurrent bleeding as a causative factor. Although albuminuria occurs in a high percentage of cancer patients, the cause is unknown and in our series occurred in forty-five (28.5 per cent) cases.

Cancer of the stomach is most deadly, causing about 25,000 deaths every year in the United States.[5] The unfortunate aspect is that 50 per cent of all gastric cancers metastasize even before the appearance of initial symptoms.[5] Thus, it becomes obvious that persistent digestive disturbances in anyone beyond forty years of age should be thoroughly investigated. Loss of appetite, belching, and perhaps mild abdominal pain may be the only signs. However, anorexia is usually one of the first symptoms, and in our series (Table X) occurred in twenty-four out of twenty-seven cases (88 per cent). Anorexia, chronic dyspepsia, nausea, loss of weight and vomiting constituted the five outstanding symptoms (Table X). Achlorhydria, occult blood in the stools, anemia, weakness, hematemesis, palpable epigastric mass and dysphagia occurred with significant frequency so as not to be overlooked as possible symptoms and signs of carcinoma of the stomach. Dysphagia may be a relatively early sign of cancer involving the cardiac end of the stomach. According to Wangensteen and associates,[2] the absence of free hydrochloric acid in the stomach may be a good screening test for detection of cancer of the stomach. Unfortunately, in our series of twenty-seven cases, gastric analysis was done only in nine cases, all of which showed an achlorhydria. Carcinoma has been known to respond to ulcer therapy and here may lie the danger of confusing a malignancy with that of peptic ulcer. The difficulties encountered in early detection of cancer of the stomach are many and well known. Even after application of all available diagnostic means at our disposal, the results are often disappointing. As Rigler states,[2] "It is easy to detect a change on x-ray examination, but the nature of such may be difficult to determine."

A large percentage of cancer of the intestines occurs in the sigmoid and rectum which in our series (Table V) constituted nineteen cases (61.0 per cent) of thirty-one cases involving the colon. It has been estimated that approximately 50,000 persons in the United States harbor cancer of the colon or rectum in the presymptomatic state.[5] The great majority (90 to 95 per cent) of cancers in the sigmoid and rectum are within easy reach of the examining finger or instruments.[5] In spite of the accessibility of these lesions for early diagnosis and the fact that they metastasize rather late, about 10 per cent of all cancer deaths annually are attributable to cancer in these locations.[5] The symptoms of fatigue, weight loss, increasing constipation, change in bowel habits, vague indigestion and anemia are all important warning signs. Cancer in the right half of the colon may give no symptoms; and, since these tumors bleed easily, the first symptoms may be those resulting from anemia.[3] In our series of ten cases of carcinoma involving the right half of the colon, anemia occurred in eight (80 per cent) (Table XI). Carcinoma of the left half of the colon usually produces colicky lower abdominal pain due to a slowly developing obstruction.[3] However, blood

TABLE XII. LEFT HALF OF COLON—TWENTY-ONE CASES

Symptom	Number	Percentage
Occult blood in stool	12	57.1
Colicky abdominal pain	11	52.3
Change in bowel habits	10	47.6
Weight loss	8	38.0
Anemia	7	33.3

TABLE XIII. PANCREAS—TEN CASES

Symptom	Number	Percentage
Epigastric pain radiating to back	7	70
Jaundice	6	60
Weight loss	6	60
Palpable tumor mass	4	40
Anemia	3	30

TABLE XIV. PROSTATE—EIGHTEEN CASES

Symptom	Number	Percentage
Nocturia	15	83.3
Frequency	13	72.2
Burning on urination	10	55.5
Dribbling on urination	9	50.0
Weight loss	7	38.8
Difficulty in starting stream	7	38.8
Anemia	5	27.7

TABLE XV. BREAST—TWELVE CASES

System	Number	Percentage
Single lump	11	91.6
Serous discharge	5	41.5
Bloody discharge	4	33.3
Nodes in axilla	4	33.3
Anemia	3	25.0
Loss of weight	3	25.0
Retraction of nipple	2	16.6
Dimpling of skin	2	16.6

and mucus are commonly found in the stools. In our series (Table XII), the three outstanding symptoms in order of frequency were: occult blood in the stools (57.1 per cent), colicky abdominal pains (52.3 per cent), and change in bowel habits (47.6 per cent). Since 90 to 95 per cent of cancers in the sigmoid and rectum are within reach of the finger or instruments, the routine procedure of rectal examination will undoubtedly uncover many more early lesions.

There are usually no physical findings in the early stage of carcinoma of the pancreas.[5] The complaint of epigastric pain radiating to the back is a common early sign and occurred in seven (70 per cent) of our cases. The presence of a palpable mass is a late manifestation. The traditional symptom of painless jaundice occurred in six (60 per cent) of our cases (Table XIII). The law of Courvoisier applies here also, according to which the presence of obstructive jaundice and distention of the gall bladder is likely to be due to carcinoma. Weight loss was encountered in 50 per cent, palpable tumor mass in 40 per cent, and anemia in 30 per cent of these cases.

Early cancer of the prostate is only usually discovered as an incidental finding in routine rectal examinations.[5] Unfortunately, the cancer is usually far advanced before symptoms are distressing enough for the patient to seek medical attention. The first symptoms, though unfortunately not early, are usually frequency and burning. In our series (Table XIV) nocturia occurred in fifteen out of eighteen cases (83.3 per cent) with frequency and burning occurring in 72.2 and 55.5 per cent, respectively. The diagnosis of early cancer of the prostate by digital examination should be confirmed by microscopic studies. The failure to do a cystoscopic examination is often the reason for missing carcinoma of the urinary bladder. The elevation of alkaline phosphatase is nonspecific, but the additional finding of an elevated acid phosphatase above 10 King-Armstrong units establishes the diagnosis of bony metastases. In our series, only seven out of eighteen cases had an acid phosphatase determination, four of which had elevated levels ranging from 24.8 up to 205 King-Armstrong units, and all had bony metastases as evidenced by x-ray examinations.

In 1945, of the total cancer deaths, 85,000 were women and 15,000 of these died of cancer of the breast.[1] The percentage of malignancy of the breast closely parallels the full maturity of the organ, and therefore the highest incidence occurs in the age group of forty-five to fifty-five. There are many diagnostic signs of breast cancer, of which pain, discharge, lump, retraction of nipple, puckering of the skin, and palpable lymph nodes are the outstanding. Pain usually indicates a benign lesion, especially if it increases in severity at the menstrual period. However, its nature should be carefully scrutinized. Retraction of the nipple may be an early or late sign. A bloody, serous or white fluid discharge is suggestive; a single lump should always be considered cancer until proved otherwise by biopsy.

In our series (Table XV), the presence of a single lump occurred in 91.6 per cent, serous discharge in 41.5 per cent, nodes in the axilla and bloody discharge in 33.3 per cent each. The presence of anemia and weight loss occurred in 25 per cent each, with signs of retraction of the

TABLE XVI. OVARY—FIVE CASES

Symptom	Number	Percentage
Abdominal discomfort	3	60
Palpable tumor	3	60
Backache	2	40
Loss of weight	2	40
Ascites	2	40
Abnormal menstruation	2	40
Anemia	1	20

TABLE XVII. CERVIX—SEVEN CASES

Symptom	Number	Percentage
Irregular bleeding	5	71.4
Leukorrhea	4	57.1
Loss of weight	2	28.5
Anemia	1	14.2

TABLE XVIII. UTERUS—FIVE CASES

Symptom	Number	Percentage
Postmenopausal bleeding	4	80.0
Anemia	2	40.0
Loss of weight	2	40.0
Burning on urination	1	20.0
Nocturia	1	20.0
Frequency	1	20.0

nipple and dimpling of the skin in 16.6 per cent each.

Unfortunately, cancer of the ovary is symptomless in its early stage. Backache which is a rather common complaint of women occurred in 40 per cent of the cases and should arouse suspicion for a thorough examination. Abdominal discomfort and a palpable tumor mass occurred in 60 per cent each and were the two outstanding symptoms (Table XVI). Peritoneoscopy with biopsy may eventually prove of great value in the diagnosis of cancer involving many of the abdominal organs. The most reliable signs are still: (1) a palpable abdominal mass or enlargement of an ovary and (2) visible increase in the size of the abdomen with or without ascites. Unfortunately, the foregoing are late signs and may explain why ovarian cancer is not diagnosed early and is often an incidental finding during a surgical exploration of the pelvis.

A biopsy of the cervix which is usually an office procedure should make early diagnosis the rule. However, the early symptoms of irregular bleeding and leukorrhea are usually lightly regarded by women, and early diagnosis is the exception rather than the rule. In about one third of the cases, abnormal bleeding is a late symptom. Biopsy should be done routinely on all cervices showing a small erosion or cervicitis. In our series (Table XVII), irregular bleeding and leukorrhea were encountered in 71.4 and 57.1 per cent, respectively.

TABLE XIX. LUNG—TEN CASES

Symptom	Number	Percentage
Pain in chest	8	80
Blood tinged cough	6	60
Pleural exudate	6	60
Loss of weight	5	50
Wheezing	3	30
Anemia	2	20

Irregular bleeding, during or after menopause, should be considered as due to cancer of the uterus unless proven otherwise by microscopic examination. Here again, by a relatively simple procedure, we are able to make an early diagnosis. In our series (Table XVIII), post menopausal bleeding occurred in 80 per cent of the cases.

In our series, cancer of the lung accounted for ten out of 174 patients (5.6 per cent). There appears to be a definite predilection for males (Fig. 1), and whether this is due to smoking habits is debatable.[5] The most common symptom is cough which may be persistent or may occur in paroxysms and is usually associated with blood tinged, mucoid or purulent expectoration. Pain is not a constant symptom, the location depending upon the part of the pleura involved. However, in our series (Table XIX) pain in the chest occurred in eight (80 per cent) with blood-tinged cough in six (60 per cent). Pleural exudation *per se* is not a diagnostic sign of cancer and occurred in six (60 per cent) of our cases. All had examination of the pleural fluid, and four (66.6 per cent) revealed cancer cells. This brings up the efficacy of routine examination of all fluid accumulations for the presence of carcinoma cells. This procedure in the hands of an experienced pathologist is undoubtedly a reliable adjunct and often makes the diagnosis in obscure cases. The importance of x-ray examinations cannot be overemphasized. Fluoroscopy and chest films in various positions as well as at the height of inspiration and expiration is of importance.[2] A localized area of atelectasis or emphysema should make one suspicious of carcinoma. In addition, bronchoscopy and biopsy are important adjuncts.

Conclusions

1. Approximately 1 per cent of all admissions to this hospital over a five-year period resulted in death by cancer.

2. Over one-sixth of the necropsies performed over a five-year period were diagnosed cancer.

3. The sex percentage was 58 per cent men and 41.9 per cent women.

4. With reference to age groups, out of 174 cases, 12 per cent occurred in the age group forty-one to fifty, 27 per cent in fifty-one to sixty, 21.8 per cent in sixty-one to seventy, and 25 per cent in seventy-one to eighty. A total of 150 out of 174 cases (86 per cent) occurred in the age group between forty-one to eighty.

5. In terms of organs primarily affected, the digestive tract accounted for a total of 45.9 per cent; the reproductive system, 17.0 per cent; the genito-urinary system, 14.9 per cent; the lymphatic system and bone marrow, 10.9 per cent; and the respiratory system, 7.4 per cent, of which 5.6 per cent occurred in the bronchi.

6. The sex specific cancer mortality with reference to primary sites was generally higher in males, except in the reproductive system.

7. The average mean age with reference to organs varied from 49.6 years with cancer of the kidney to 71.6 years with cancer of the prostate.

8. The total average time interval in months from the onset of symptoms to death was 5.98 with cancer of the digestive tract; 5.6 in the bronchi; 10.8 in the lymphatic system and bone marrow; 16.4 in the genito-urinary system; and 29.4 in the reproductive system.

9. The systemic effect of emaciation occurred in a total of sixty-seven (38.5 per cent) of the cases, in which group forty-four (65.6 per cent) occurred with malignancies of the digestive tract.

10. Approximately one-half of the cases of moderate anemia and one-third of those with severe anemia occurred with malignancies of the digestive tract.

11. Albuminuria occurred in forty-five (25.8 per cent) of the cases.

12. The five outstanding symptoms of cancer of the stomach were: anorexia in 88 per cent, chronic dyspepsia in 77.7 per cent, nausea in 70 per cent, loss of weight in 51.8 per cent, and vomiting in 47.7 per cent.

13. Gastric analysis was done only in nine out of twenty-seven cases of cancer of the stomach, and all showed an achlorhydria.

14. In our series, 61 per cent of cancer involving the colon occurred in the sigmoid and rectum.

15. Anemia which is usually a prominent symptom of cancer of the right half of the colon occurred in 80 per cent of our cases in this half of the colon.

16. Colicky abdominal pain which is usually a prominent symptom of cancer of the left half of the colon occurred in 52.3 per cent of these cases.

17. In our series, only seven out of eighteen cases of cancer of the prostate had acid phosphatase determination, four of which showed elevated levels and evidence of bony metastases by x-ray.

18. A single lump in the breast was the outstanding finding in eleven out of twelve cases of cancer of the breast.

19. Irregular bleeding occurred in 71.4 per cent of cancer of the cervix and postmenopausal bleeding in 80 per cent of cancer of the fundus of the uterus.

20. Examination of pleural fluid for cancer cells was done on all cases of bronchogenic carcinoma with pleural effusion, and was positive in four (66.6 per cent) of the cases.

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TONSILLECTOMY AND POLIOMYELITIS

The mode of transmission and the portal of entry of the virus of poliomyelitis remain unknown. Without this knowledge we are forced to theorize on the relationship between tonsillectomy and poliomyelitis.

A statistical survey indicates that poliomyelitis is relatively infrequent following tonsillectomy. The study carried out at Manhattan Eye, Ear and Throat Hospital on 11,204 tonsillectomy patients over a seven-year period revealed but four cases of poliomyelitis following tonsillectomy. None was of the bulbar type.

The widespread alarm on the part of the public, shared by doctors in some communities, is unfounded on the basis of our statistics.

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GENERAL PRINCIPLES IN THE TREATMENT OF PEPTIC ULCER

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PEPTIC ulcer is perhaps one of the greatest obstacles in our efforts to practice medicine scientifically. It readily fits into a category occupied by hypertension and arthritis, so placed because of the cloud of confusion that is associated with them.

The little substantial information that we have has been given to us by the physiologist who, thus far, has done the most practical investigative studies. Even that is insufficient knowledge to enable the clinician to treat the individual who has a peptic ulcer with anything but symptomatic management.

Although the etiology of peptic ulcer is not known, the pathogenesis should be discussed. Konjetzny demonstrated that an ulcer begins in the mucosa and has a penetrative tendency. Mann and others have shown that the experimental ulcer in animals also tends to penetrate and is identical in pathological appearance and in behavior with peptic ulcer as seen in human beings.

It has been proved satisfactorily that the production of these ulcers is impossible unless acid gastric juice is present. Cade, Varco, Wangensteen and coworkers were able to produce typical chronic peptic ulcer in the dog and other animals by inducing a continued hypersecretion of gastric juice by the injection of a slowly absorbable mixture of histamine and beeswax. Mann produced experimental ulcer by allowing hydrochloric acid to drip continuously into the stomach.

Peptic ulcer occurs only in those portions of the human digestive tract exposed to the action of acid gastric juice, i.e., the lower esophagus, the stomach, the first and second portions of the duodenum and stomal areas after gastroenterostomy. The observation of Brown and Pemberton, that a primary ulcer of Meckel's diverticulum occurred adjacent to aberrant acid-secreting gastric mucosa, stresses the importance of acid in the production of peptic ulcer.

In 2,500 cases of peptic ulcer, Palmer was unable to find a single case of active chronic peptic ulcer in the presence of complete and permanent anacidity. The importance of acid in the duodenum, or the lack of neutralization of the duodenal acid, in the formation of ulcer is suggested indirectly by the work of Berk, Rehfuss and Thomas. They pointed out that normal people exhibit a neutralizing ability in the first part of the duodenum which is inferior to that of normal dogs. These animals are notoriously resistant to peptic duodenal ulcer.

Other phenomena as hypermotility, hyperperistalsis, hypertonicity and hypersecretion play definite roles in the pathogenesis of peptic ulcer. These conditions obviously indicate that there is an increase in activity above normal.

Although the various treatments of peptic ulcer are far from ideal, it must be remembered that the chief principle to be followed is patterned by physiological changes in secretion occurring in this condition. Many of us fail to note this. In other words, individualization of treatment based on fundamental physiological facts should be our pattern of therapy.

There should be a thorough evaluation of the patient before a method of treatment is decided upon. The x-ray appearance of the ulcer will only aid in the plan of action to be used. The individual's nervous make-up is perhaps the greatest stumbling block in the management of most cases. We all recognize the fact that tension due to fear or anxiety will cause a quiescent ulcer to manifest symptoms. This is not only a characteristic of military personnel during the past war, but it is also true of civilians. If emotional forces are capable of producing symptoms, they must be dealt with accordingly. When this control is difficult, although the ulcer is an uncomplicated one, the phrase "intractable ulcer" creeps into our thoughts, and we may prematurely consider surgery as the treatment of choice. Here a psychiatric study of the patient should be made by the physician in most cases, but occasionally it will be necessary to have him consult a psychiatrist. At this point, good doctor-patient relationship is extremely important, in that it is absolutely necessary to allay the emotional factors present.

Dietotherapy is perhaps the most valuable

Presented on January 23, 1946, at a meeting of the Oak Ridge, Anderson County, Roane County, Knox County and Campbell County Medical Societies at Oak Ridge, Tennessee. At the time of presentation Dr. Ryan was chief of the Medical Service at Oak Ridge Hospital, Oak Ridge, Tennessee.

means we have to control the acidity of gastric secretion. Food in the stomach is much more comforting to the patient with a peptic ulcer than is an alkali medicament in the greater number of cases. Here again we should evaluate the patient as to the type of diet he requires, and individualization will be necessary. Diet with rest, provided the rest can be obtained without undue worry, really is the treatment to be strived for in the management of the uncomplicated duodenal ulcer. Less than three weeks of rest is seldom beneficial. I have had under my care patients whose discomfort was exaggerated by strict adherence to the Sippy diet. These same patients improved markedly when the diet was decreased in amount or the feedings were spaced differently. In dietary management one should not overlook the caloric requirement of the individual. This principle is especially true in care subsequent to hemorrhage. Bockus lists the principles upon which dietary management may be based: The diet should contain sufficient calories, absence of gastric secretagogues, absence of cellulose and meat fiber because of the danger of trauma to the ulcer site, and the diet should be liquid or semiliquid.

Alkalies are valuable adjuncts in the treatment of the uncomplicated peptic ulcer. However, they serve only a secondary purpose. Their use is perhaps more efficient in the treatment of the ambulatory patient who is unable to neutralize the gastric contents with frequent feedings. The proponents of various alkaline substances have succeeded in placing a cloak of mystery over the underlying principles of neutralization. Some individuals will respond to sodium bicarbonate and others are more comfortable while taking colloidal aluminum hydroxide. Even in the use of alkalies good judgment is needed. A serious ill effect of large doses of soluble alkalies is the systemic alkalization which may occur. This is especially true in the older patient with arteriosclerosis and renal changes, whose function of urea clearance may be disturbed. Colloidal aluminum hydroxide is less likely to produce such changes, as there is very little absorption of the drug. Investigators have shown that it has no effect on the evacuating time of the stomach when fed in large amounts to animals. Komarov points out that aluminum hydroxide aids in diminishing peptic digestion.

The advisability of using belladonna in attempt to block out impulses over vagal routes is very questionable. Gastric motility may be diminshed by using doses large enough to produce the side effects of blurring of vision and dryness of the mouth. In the majority of cases of uncomplicated ulcer, relief of symptoms with progress in healing can be attained without it.

Mild sedation is necessary, especially in the patient who has emotional upsets. Sedation is of great value in treating the ambulatory patient, whereas in the hospital, rest and relaxation are more easily obtained. Phenobarbital is the sedative of choice and can be given in doses ranging from ¼ to 1 grain three times daily.

The use of tobacco must be stopped at the onset of treatment. Patients are more likely to have earlier relief of pain when smoking has been discontinued. In our experience here, best results were obtained when alcohol was also eliminated.

Another more recent treatment of peptic ulcer deals with the hormone, enterogastrone, which was originally isolated by Kosaka and Linn, and has been purified by Ivy and his associates. They have now reported its use in fifteen clinical cases, with good response.

The internist and the surgeon should not disagree as to the management of the individual who has an ulcer. There should be close co-operation between them, and the time at which the patient should be transferred to surgery can be determined by the internist. There should be no procrastination nor should there be any attempt to get rid of the patient prematurely because he does not respond to medical treatment.

The indications for surgical care resolve themselves into the following classification:

1. Repeated hemorrhage.
2. Perforation of an ulcer.
3. Stenosis resulting in obstruction.
4. Ulcers on the greater curvature of the stomach, and a gastric ulcer that does not disappear completely in six weeks on adequate medical treatment without a resulting scar.
5. Intractable duodenal ulcer.

The term "intractable" is widely and loosely used. There is always the question of the time at which this term can be applied to the ulcer. The ideal management consists of proper rest, diet, and alkalization over a period not less than three months. By proper rest I mean hospitalization or satisfactory bed rest in the home. Every factor that might stimulate the ulcer symptoms should be investigated thoroughly before any thought should be given to surgical treatment. Of course there are many patients who cannot undergo strict management because of their temperament. There are also patients who will refuse to abstain from tobacco, and they will gladly submit to surgery rather than follow a strict regime. The financial question also enters into the picture. This is especially true of an individual who has a responsible position. It is difficult to explain to him why he should not have surgical treatment so that he can return to his employment at an earlier date. Many of us fail to discuss openly the possible results of operations for ulcer. An individual who has an intractable ulcer should be told of the possibilities of incomplete cure following surgical methods of treatment. Honest opinions given at this time will prevent much unnecessary explanation several years later. The patient often undergoes surgical treatment believing that his troubles will be over completely. This is not only the fault of the internist but of the surgeon as well. I have heard many surgeons tell their patients after leaving the hospital, following surgical gastric resection, that they would be able to eat everything and lead perfectly normal lives, only to have them return to the internist later for further management.

Excluding the acute emergencies, such as perforation, persistent bleeding, et cetera, the surgical treatment of peptic ulcer has now been narrowed to one popular procedure—resection of from two-thirds to three-quarters of the stomach in an attempt to diminish or to entirely abolish acid secretion. This operation has been more successful than gastroenterostomy or any other procedure used in the past. The basic principle is to abolish acid secretion. Because of the advances in anesthesia and physiological control of fluid balance, this operation carries a much lower mortality rate than it did several years ago.

Another surgical procedure that may become popular within the next few years is that of resection of the vagi in an attempt to reduce gastric secretion. Dragstedt has reported several cases with very satisfactory results. We have had under our observation here one case upon which this method of treatment was used with apparently good results. This case is not to be reported now as sufficient time has not elapsed since operation. However, the outstanding result noted so far has been the marked decrease in nocturnal gastric secretion.

The surgical treatment and the type of operation to be used should be left to the surgeon who is to operate. The internist should always bear in mind that the surgeon who does gastrointestinal surgery should be one who has had sufficient training and experience to take the responsibility of removing healthy tissue in order to bring about a good functional result. Again we may thank the physiologist for the advances he has achieved in the study of fluid balance, and the pharmacologist because he has furnished the surgeon with new anesthetics that permit better operative technique and a lower mortality.

Summary

The treatment of peptic ulcer resolves itself into a principle of "common sense." The patient should be treated as an individual and the ulcer should be remembered as being the property of that individual—not the individual the property of the ulcer. There has been little advancement in our knowledge of peptic ulcer within the past ten years. The methods and principles of treatment have remained practically at a standstill. This is, of course, the consequence of not knowing the etiology of the disease. Perhaps routine gastrointestinal studies on a series of normal individuals in the late teen ages will enable us to get some idea of the early formation of an ulcer in an individual who is susceptible to it.

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CONGENITAL DIAPHRAGM OF THE DUODENUM

Case Report with Preoperative X-Ray Studies

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CONGENITAL diaphragm of the duodenum is a developmental anomaly in which a membrane, formed by an infolding of the mucosa and submucosa, extends across the lumen of the duodenum. The diaphragm may be complete or it may present an aperture. It is to be differentiated from stenosis and atresia (Fig. 1). In the former, there is a marked local narrowing of the lumen, due to thickening and approximation of the walls. In the latter, there is a complete obliteration of the lumen, due to fusion of the walls. In reviewing the literature one finds these terms used interchangeably so that it is necessary to cover many irrelevant articles in order to be sure to include all cases of congenital diaphragm.

Those cases of a duodenal diaphragm without an aperture are, of course, instances of congenital high intestinal obstruction. Unless they are recognized and successfully operated upon, they die during the first few days of life. Those presenting small apertures in the diaphragm may have no symptoms, but they are, in fact, instances of chronic partial obstruction, and, as such, they are potential candidates for complete obstruction.

Incidence

No case is recorded in over 43,000 autopsies at the Department of Pathology, University of Minnesota. A review of the literature reveals thirty-five reported cases of congenital duodenal diaphragm. According to Krieg,[8] Robert Boyd, in 1845, was the first to report a case of obstruction of the duodenum due to a diaphragm (Table I).

Between 1845 and 1913 seventeen cases of congenital diaphragm of the duodenum were reported in the literature. None of these were operated upon, but all were discovered at autopsy. Then in 1916 Terry and Kilgore[21] operated upon a young adult in whom they found an obstruction of the duodenum and established a posterior gastroenterostomy. There was leakage from the suture line and the patient died on the fifth day. It was not until the autopsy that the true cause of the obstruction was discovered. However, this was the first reported case in which corrective surgery was attempted. Four of the next seven cases were operated upon, but it was only at the autopsy that the duodenal diaphragms were discovered.

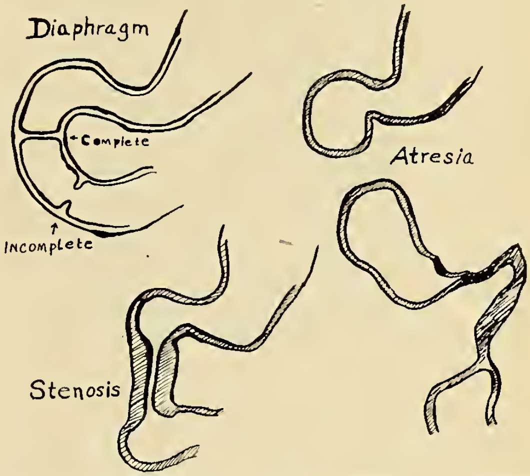


Fig. 1. Sketches to illustrate the fundamental differences between diaphragm, stenosis and atresia.

In 1925, Seidlin,[18] in describing his case, wrote, "Such a membrane, if diagnosed *intra vitam,* might be amenable to surgical treatment."

In 1933, Ladd[9] discovered a duodenal diaphragm while operating on an eight-year-old child and performed a duodeno-jejunostomy which resulted in the first surgical cure. In 1935, Morton[13] operated on his second case and was the first to remove such a diaphragm.

Krieg's case[8] had been missed by others at two previous explorations.

In Braun's second case[2] the x-ray showed an enlarged duodenum with obstruction in the third portion which was erroneously interpreted as an ileus due to mesenteric thrombosis, and no operation was done.

In Saunders and Lindner's case,[16] the true pathologic condition was missed at the first operation when the patient was fifteen months of age, but was recognized and successfully corrected at a second operation when the child was seven years of age.

Presented at a meeting of the Minneapolis Surgical Society, March 6, 1947.

TABLE I. REPORTED CASES OF CONGENITAL DUODENAL DIAPHRAGM

Author	Date	Age	Operation	Recognition	Proximal Dilation	Ring Constriction	Aperture	Result	Remarks
Boyd, R.	1845	Stillborn	None	Autopsy			None	Death	
Buchanan, G.	1861	18 mo.	None	Autopsy	Yes		2.5 mm.	Death	
Moore, N.	1884	40 yrs.	None	Autopsy			10-15 mm.	Death	Accidental death
Silcock	1885	34 yrs.	None	Autopsy			15 mm.	Death	Resembled finger of glove.
Galton, J.	1893	1½ days	None	Autopsy			None	Death	
C. Hampneys and Power	1897	5 days	None	Autopsy			None	Death	
Wyss, M. O.	1900	1½ days	None	Autopsy	Yes		None	Death	
Shaw and Baldorf	1907	13 days	None	Autopsy			Small	Death	
Weber	1910	10 days	None	Autopsy			None	Death	
Keith	1910	9 mo.	None	Autopsy			None (?)	Death	
Keith, A.	1910	Adult	None	Autopsy	Yes		5x3 mm.	Death	Diaphragm ballooned distally.
Roe and Shaw	1911	5 days	None	Autopsy			None	Death	
Spriggs	1912	9 mo.	None	Autopsy			?	Death	
Spriggs	1912	14 days	None	Autopsy	Yes		1-3 mm.	Death	
Wilkie	1913	Adult	None	Autopsy	Yes	Yes	Yes	Death	Proximal diverticulum.
Wilkie	1913	Adult	None	Autopsy	Yes	Yes	Yes	Death	
Wilkie	1913	Adult	None	Autopsy	Yes	Yes	Yes	Death	
Terry and Kilgore	1916	24 yrs.	Posterior gastro-enterostomy	Obstruction recognized at operation but cause not recognized	Yes	Yes	Yes	Death on fifth day	First attempt at corrective surgery. Leakage at suture line. Real pathologic condition discovered at autopsy.
Schroder, C.	1921	14 wks.	Exploratory and jejunostomy	Autopsy			3 mm.	Death	
Morton, J. J. First case	1923	1 day	Release paraduodenal hernia	Autopsy			None	Death	
Nagel, G.	1925	70 yrs.	Exploratory	Autopsy	Yes	No	8 mm.	Death	X-ray showed dilated stomach. At operation found intussception of stomach into espohagus.
Seidlin, S.	1925	2½ yrs.	None	Autopsy	Yes	Yes	7 mm.	Death	Septum dome-shaped. Obstruction precipitated by eating canned corn.
Thorndike, A.	1927	17 days	Exploratory and jejunostomy	Autopsy			1 mm.	Death	
Garvin, J.	1928	5 days	None	Autopsy			None	Death	
Cannon and Halpert	1929	8 yrs.	None	Autopsy	Yes		4 mm.	Death	Rupture of stomach after several enemas.
Ladd	1933	8 yrs.	Duodeno-jejunostomy	At operation			Yes	Cured	
Morton, J. J. Second case	1935	5 days	Electro-desiccation	At operation			None	Cured	
Kreig, E.	1936	32 yrs.	Posterior gastro enterostomy	Missed at two previous operations, discovered at third operation			8 mm.	Cured	Had operations in 1917 and 1927, and not recognized.
Braun, H.	1938	2 yrs.	None	Autopsy	Yes	?	8 mm.	Death	
Braun, H.	1938	49 yrs.	None	Autopsy. X-ray revealed an obstruction in distal duodenum but cause was not recognized	Yes	?	6 mm.	Death	X-ray showed megaduodenum and stenosis in lower third of duodenum. Suspected ileus due to mesenteric thrombosis.
Nagel, C. E.	1939	1 yr.	Duodeno-jejunostomy	By finger exploration through duodenotomy at operation	Yes	?	Admitted tip of little finger	Death	No autopsy.
Saunders and Lindner		15 mo.	Not noticed at first	Missed at first operation	Not recorded		Size not stated	Missed	Preoperative diagnosis was congenital stenosis of second and third portion.
	1940	7½ yrs.	Excision	X-ray predicted obstruction. Recognized at operation	Yes	Yes		Cured	At 7½ yrs., x-ray indicated obstructed second and third portion.
Brody	1940	Newborn	None	Autopsy	Yes	?	None	Death	Ruptured diverticulum of stomach.
White and Collins	1941	1 mo.	Gastro-jejunostomy	Obstruction recognized at operation but only at autopsy was true nature discovered.	Yes		Yes	Death	
Sumner and Morris	1945	5 days	Posterior gastro-enterostomy	Operation and x-ray	Probable		None	Cured	X-ray showed complete obstruction.
Nelson, W. I.	1944	26 yrs.	Duodenotomy and excision	Operation	Yes	Yes	10 mm.	Cured	Diagnosis predicted on basis of preoperative x-ray.

Of the thirty-five cases reported in the literature (Table I) twelve were operated upon. *In only six cases (8, 9, 13, 14, 16, 20) of the entire series was the true nature of the lesion discovered during life.* Of the six, only one was an adult. Five patients were cured by operation.

This paper is presented so as to call the attention of the profession again to this anomaly and to emphasize certain aids in diagnosis. In addition a case is reported herein which is believed to be the first in the literature in which preoperative x-ray studies revealed the presence of a congenital duodenal diaphragm.

Embryology

Most articles on this subject refer to Tandler's paper, published in 1900, which stated that the lumen of the duodenum became obliterated at about the fifth week of fetal life by the ingrowth of epithelial cells. He also stated that the lumen was re-established about the twelfth week by a process of vacuolization. According to his theory a diaphragm formed when a portion of the epithelial cord was not absorbed. According to Boyden[1] this explanation is erroneous. The lumen of the duodenum does not form and then become obliterated. Instead there are two rows of vacuoles which form in the region which is to become the duodenum. One row forms along the lesser curvature side and one along the greater curvature side. These vacuoles coalesce to form a lumen. Failure of complete coalescence can result in a variety of anomalies, including longitudinal or transverse septa. Transverse membranes occur most frequently in the region of the ampulla of Vater (Fig. 2).

Anatomy

The diaphragm is what its name implies, only a thin membrane stretching across the lumen of the duodenum. It varies in thickness from 0.5 mm. to 4 mm. In several instances it was stretched so as to project distalward in the lumen with its aboral surface convex. Silcock,[19] in 1885, wrote as follows in describing his case: "In the duodenum, six inches below the pylorus, is a congenital septum which barely admitted the tip of the little finger. A pouch formed of mucous and submucous tissue projects downward into the lumen of the gut and roughly may be likened in size and shape to the thumb of a glove."

In eight of the cases definite mention was made at operation or autopsy of a ring of constriction visible on the duodenum at the level of the diaphragm. In eighteen cases it was stated that the duodenum proximal to the lesion was dilated and hypertrophied. In several cases the stomach, pylorus, and proximal duodenum were dilated and hypertrophied. In a few of these a moderate relative narrowing at the pylorus gave the impression of an hour-glass stomach. Several reported that the stomach and duodenum were normal on external appearance.

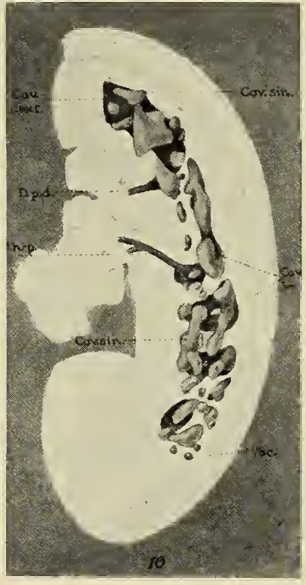


Fig. 2. Illustration from an article by R. A. Schwegler and E. A. Boyden in the *Anatomical Record,* volume 67, page 459. Note the two rows of vacuoles which are to become the duodenal lumen.

Histologically the diaphragm is made up of two layers of otherwise normal duodenal mucous membrane with some intervening submucosa. In Brody's case[3] some aberrant pancreatic tissue was found at the base and extending out between the layers of the diaphragm.

Although the membrane may be at any level of the duodenum, in the great majority of reported cases the diaphragm was found at or near the level of the ampulla of Vater. Both the common bile duct and the pancreatic duct have been reported traversing the diaphragm, and either or both ducts may empty into the bowel through either surface of the diaphragm (Fig. 3). This is to be borne in mind in planning the surgical management of such a case.

As is often the case, when one congenital anomaly is present, other anomalies may be present. This occurred in several of the reported cases and, by distracting the surgeon's attention, contributed to the failure to recognize the true pathologic condition in the duodenum. Among the associated anomalies may be mentioned such conditions as incomplete rotation, internal congenital hernia, abnormal fixation, diverticulum of the stomach, et cetera.

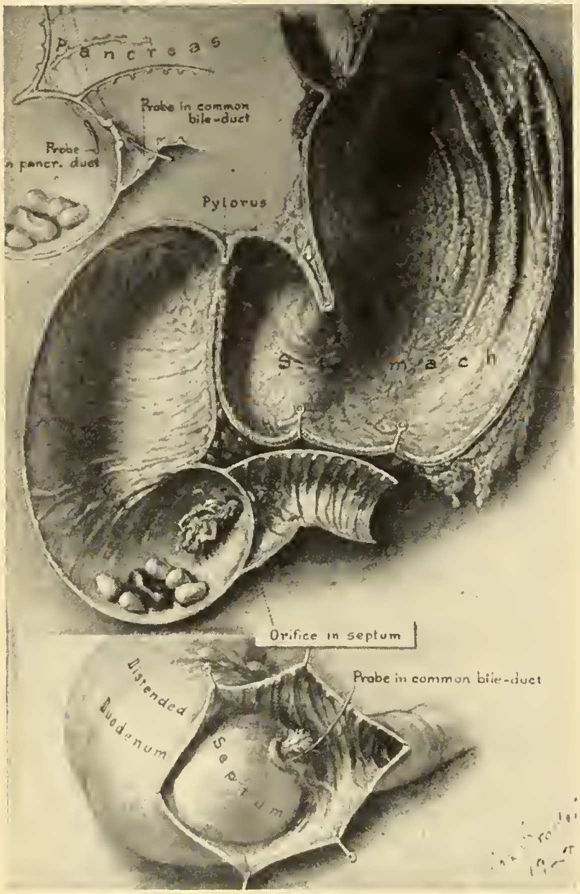


Fig. 3. Seidlin's case. Note the dome-shaped diaphragm with a central aperture, the proximal dilatation of the duodenum, and the relationship of the common bile duct to the diaphragm. *Upper sketch:* Esophagus, stomach and duodenum opened after fixation in formalin. *Lower sketch:* Duodenal lumen with septum shown from jejunal side. *Drawing in upper left corner:* Diagrammatic representation of the course of the biliary and pancreatic ducts in relation to the duodenal septum, its surfaces and orifice.

Clinical Manifestations

In cases of complete membrane without aperture, of course the obstruction is total. Persistent and recurrent vomiting appears in the first few days of life. Visible peristalsis and upper abdominal distention may be present. These patients all die unless the obstruction is recognized and relieved.

The age of onset and the severity of symptoms vary with the size of the aperture. These patients tolerate liquid nourishment, but begin to show obstructive symptoms when soft or solid foods are added to the diet. This is to be expected since the aperture in the group up to eight years of age did not exceed 8 millimeters (Table I) and could easily be blocked by food particles. Vegetables, with their high cellulose content, have been the most frequent cause of converting an incomplete chronic obstruction to an acute and complete obstruction. This is what occurred in Seidlin's case[18] (Fig. 3). In a few cases, acute obstructive symptoms did not appear but the nutrition was greatly impaired.

Morlock and Gray[11] stated that regardless of how long the first appearance of symptoms is delayed, these infants do not attain the development of normal children. However, in several cases there was no history of obstructive symptoms until adult life, and no mention was made of underdevelopment.

Right upper abdominal pain or discomfort was complained of by several nonobstructed patients. In a few cases the discovery of the condition was entirely accidental.

There was an equal distribution in the two sexes.

Referring to Table I, it is seen that the cases readily fall into three age groups. The first group includes fifteen infants under one month of age. Of these, eleven had no aperture in the diaphragm, while four did have a small aperture. Since complete obstruction is incompatible with life, those with an imperforate diaphragm came to be operated upon or died very early in life. Of the group under one month of age, all died except two,[13,20] both of whom were cured by operation on the fifth day of life. The second group of ten includes those from one month to eight years of age. The third group includes eleven adults.

Diagnosis

The most important factor in diagnosis is the ability to recognize the presence of an obstruction when it exists. Since the obstruction in these cases is high, there is no generalized abdominal distention. Visible peristalsis may be present in the epigastrium. If the vomitus contains bile, the obstruction is beyond the pylorus and the entrance of the common bile duct. Congenital pyloric stenosis does not have bile in the vomitus and is also more prone to appear about the third week of life. If the vomitus contains bile and the stools are acholic, then the obstruction is likely due to a congenital anomaly involving the duodenum. If the common duct is double, then one opening may be above and the other below the diaphragm. In such a case bile could be present in the vomitus and the stools and yet the obstruction could be complete.

The actual differential diagnosis between the various extrinsic and intrinsic causes of obstruction will often have to be made at operation. According to Morlock and Gray[11] the extrinsic factors to be considered are abnormal fixation of the duodenum, persistence of the hepatico-duodenal ligament, annular pancreas, and vascular anomalies. Intrinsic factors include atresia, stenosis, and congenital diaphragm. It is believed that more cases of the latter condition will be recognized as more doctors become aware of it as a possibility.

The literature gave no accurate study of the comparative blood laboratory tests in these cases. It is assumed that they would be the findings of any high intestinal obstruction.

In a few instances x-ray studies with and without contrast material were made. In Braun's case[2] the x-ray showed an enlarged duodenum with obstruction in the third portion which was erroneously interpreted as an ileus due to mesenteric thrombosis, and no operation was done. In Saunders and Lindner's case[16] a diagnosis of obstruction in the duodenum was made by x-ray. In G. W. Nagel's case[15] the x-ray showed a dilated stomach but no lesion. White and Collins[22] recognized an obstruction to the barium in the duodenum. As far as could be determined no recorded case was found in the literature where a preoperative diagnosis of congenital duodenal diaphragm was made by x-ray studies. In the absence of obstruction the symptoms and clinical findings are not diagnostic, so that such cases would only be diagnosed by x-ray or at operation. Attention is called to the x-ray findings in the case here reported so that both roentgenologists and clinicians will be conditioned to recognize this possibility.

At operation there may be a ring of constriction about the duodenum. At first this may suggest an adhesive band, but an attempt to remove or divide the "band," reveals that the constricting ring extends deeply into and is an integral part of the wall of the duodenum at this level.

There may be dilatation and hypertrophy of the duodenum proximal to the constricting ring. The duodenum may have the general appearance of a portion of the stomach. The dilatation may also involve the pylorus and stomach. Although greatly enlarged, these parts may be flaccid and show no distention if there is no obstruction present at the time.

It is believed that these findings (a constricting ring on the duodenum, and dilatation and hypertrophy of the proximal duodenum), when present, are so suggestive as to indicate the need for a meticulous examination of the mobilized duodenum for the presence of a congenital diaphragm within the lumen. Duodenotomy may be necessary to make the diagnosis, and should be done if there is a reasonable suspicion that a diaphragm exists.

Preoperative Management

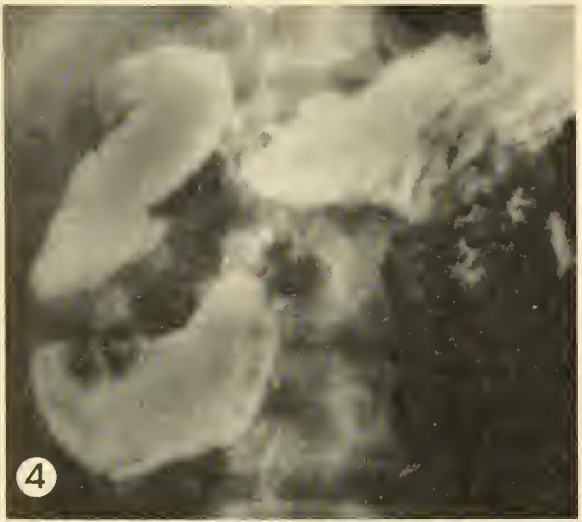
Cases with acute obstruction present the same problems as other patients with high intestinal obstruction, namely, dehydration, hypoproteinemia, loss of chlorides, et cetera. Corrective therapy should be instituted at once, but as White and Collins[22] have pointed out, if the patient is an infant, too much time cannot be spent in attempting to completely restore the body fluids and chemistry before operation.

In the absence of acute obstruction the operation can be done at a time of election, and more time can be given to preparing the patient for operation. Likewise at operation more time can be used to explore carefully for other anomalies and evaluate properly their relative clinical importance.

Management at Operation

Granted that a patient suspected of having a diaphragm in the duodenum is being operated upon, what shall the surgical procedure be? Short-circuiting operations such as gastro-jejunostomy and duodeno-jejunostomy have been employed. These procedures relieve the obstruction and at times may be the procedure of choice; however, they are not physiological. Mobilization of the duodenum, duodenotomy, and direct removal of the diaphragm is, however, the procedure which I would advocate wherever possible. Such a procedure requires a single short suture line and entails no greater risk than one of the short-circuiting procedures.

Attention is again directed to the fact that the bile or pancreatic ducts may open onto or traverse the diaphragm. Therefore, the diaphragm should be carefully examined by palpation and by transillumination so that if a duct is found it can be preserved during the excision of the diaphragm. There is no great harm done if a duct traversing the diaphragm be severed accidentally, but care must be taken so as not to occlude the duct in suturing the raw mucosal edges. Closure of the duodenum should include one row of fine nonabsorbable sutures.



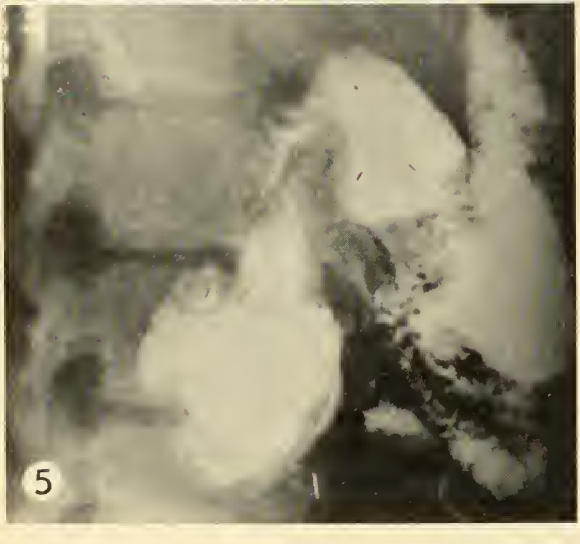


Fig. 4 *(above)* Author's case. X-ray shows narrowing in the second portion of the duodenum. Otherwise there is insufficient evidence in this film to warrant the diagnosis of duodenal diaphragm.

Fig. 5. *(below)* Author's case. Lateral view shows the third portion of the duodenum in cross section. There is a large mass of contrast material surrounded by a narrow band of barium, with a thin area of radiolucency intervening. This demonstrates that the larger accumulation is entirely within the lumen of the bowel and therefore not a diverticulum.

Case Report

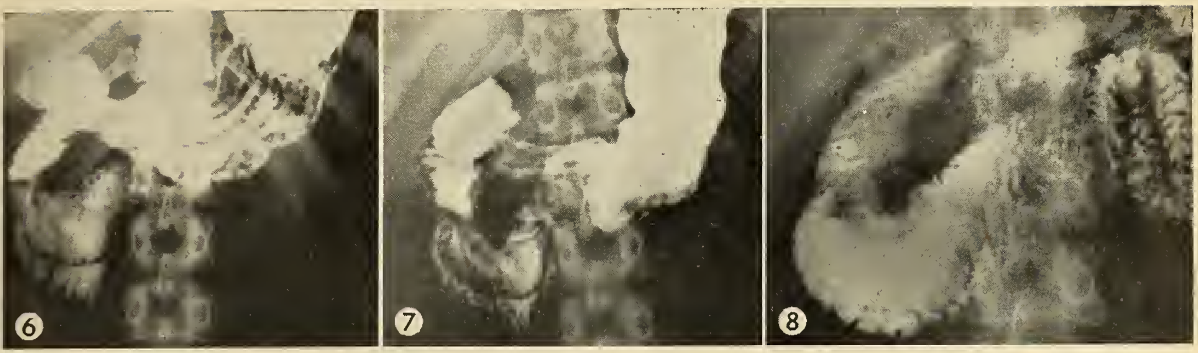
A twenty-six-year-old army nurse first noticed symptoms of her illness in March, 1944. There had been no feeding problem in infancy. A ruptured appendix had been removed in 1929. There was no history of any other gastrointestinal symptoms at any time. In 1942 she had sinusitis, joint pains, fever, and an increase in blood sedimentation rate, necessitating bed rest for six weeks.

While she was being treated in an army hospital for a severe sinus infection, she developed pain in the right flank with tenderness below the right costal margin, anteriorly and posteriorly. Pus in the urine disappeared after the administration of sulfonamides. Pain persisted, however, and she was transferred to an army general hospital where the right kidney was explored surgically on May 10, 1944. The only abnormal finding was a slight ptosis which the surgeon corrected. Pain in the right flank continued, and gradually pain in the right upper quadrant of the abdomen became more severe. In June, 1944, cholecystography indicated a normal gall bladder, and gastrointestinal x-rays showed an accumulation of barium in relation to the second and third portions of the duodeum which was diagnosed as a diverticulum.

In September, 1944, when the writer first saw her, the patient complained of persistent deep discomfort in the right upper abdomen and the right flank. There was no relation to food or meals; her appetite was fair. There was no vomiting. Bowel function was normal. She was taking as much as 90 grains of aspirin a day in order to obtain relief from the discomfort in the right upper abdomen. Physical examination at that time was negative, except for persistent tenderness in the right upper quadrant of the abdomen, with no muscle rigidity. The scars of the previous appendectomy and recent nephropexy were well healed. Laboratory studies of blood and urine were entirely normal except for blood sedimentation rate of 25 mm. per hour.

Between June and September a number of gastrointestinal x-ray studies were made (Fig. 4). The earlier diagnosis of large duodenal diverticulum was later changed to intussusception of the duodenum. A lateral film (Fig. 5) showed a profile of the third portion of the duodenum with a dense barium shadow surrounded by a narrow ring of barium (Figs. 6, 7 and 8). This proved conclusively that the accumulation was intralumenal and that we were not dealing with a diverticulum in the usual sense. The writer, having once seen a case with two diaphragms in the proximal jejunum and having read some of the literature at that time, was conditioned to include congenital diaphragm in the differential diagnosis, and went on record that the x-ray findings could be explained by a congenital diaphragm.

On September 26, 1944, the abdomen was explored. The entire duodenum and pyloric antrum of the stomach were dilated. In the second portion of the duo-



Figs. 6, 7 and 8. These views show a moderate dilatation of the entire duodenum with a zone of narrowing of the second portion of the duodenum. There is a thin area of radiolucency, within the confines of which there is an accumulation of barium. Surrounding this, mostly on the antimesenteric margin, there is a smaller amount of barium outlining the mucosal folds of the duodenum.

denum there was a fine ring-like indentation or infolding of the wall. The portion of the duodenum proximal to the ring was also thickened and redundant, so that at first sight, it resembled the pyloric antrum of the stomach. The entire descending duodenum was mobilized and turned medially to demonstrate that there was no diverticulum originating from the duodenum. A mobile thickening was palpable within the lumen of the second and third portions of the duodenum, resembling in feeling a soft, pedunclated polyp, attached in the region of the ring-like indentation previously mentioned.

The duodenum was opened by a linear incision, extending distally from the level of the constricting ring, exposing the inferior surface of a congenital diaphragm attached around the entire circumference of the duodenum at the level of the constriction (Fig. 9). Near the lateral or antimesenteric margin of the diaphragm, there was an eccentric aperture about 10 mm. in diameter. The mesial portion of the diaphragm was greatly stretched and formed a sac which extended distally within the lumen of the duodenum from its origin. The entire diaphragm and sac were covered with mucous membrane on both surfaces.

The sacculation was incised longitudinally to permit careful palpation and transillumination, and the diaphragm was excised at its base around the circumference of the lumen of the bowel. This was necessary in order to avoid injury to the common bile duct or pancreatic duct which often traverse a portion of such a diaphragm (Fig. 3). In this case, the papilla of Vater was found about one centimeter proximal to the diaphragm, on the posterior wall of the duodenum (Fig. 9). The cut edge of the diaphragm was sutured with fine chromic catgut. After closure of the duodenum by transverse suture, the lumen was adequate.

With the exception of a mild atelectasis which responded to therapy, the postoperative course was uneventful. The patient was relieved entirely of pain in the right upper quadrant and flank, and has had no recurrence of symptoms. Roentgenograms made in May, 1945, showed no abnormality of the duodenum except a slight enlargement of the cap.

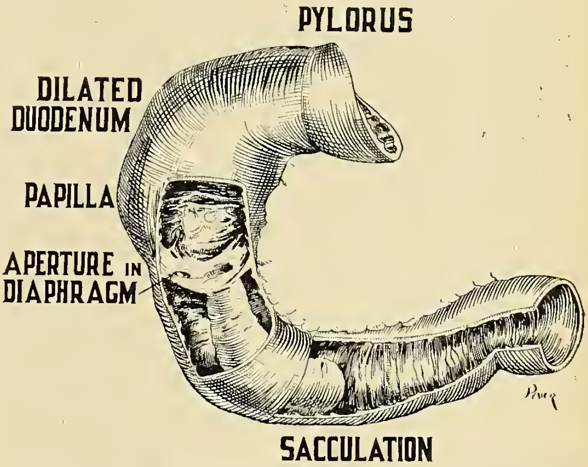


Fig. 9. Semi-diagrammatic sketch of the operative findings in the author's patient. Note the diaphragm forming a sacculation within the lumen of the duodenum, and the position of the papilla of Vater just proximal to the diaphragm. Barium or food entering the sac had no way of escape except by being ejected back into the duodenum proximal to the diaphragm and then passing through the aperture in the diaphragm.

Summary

1. Thirty-five cases of congenital diaphragm of the duodenum have been reported in the literature, only six of which were recognized during life; of these, five were cured.

2. One case is reported here of a twenty-six year-old woman in whom the x-ray studies permitted the preoperative diagnosis to be made. This patient has been cured by resection of the duodenal diaphragm.

3. Dilatation of the proximal duodenum demonstrable by x-ray has been reported in this condition by others. The x-rays of the case here reported clearly showed a congenital diaphragm forming a sacculation within the duodenum.

4. Duodenotomy and excision of the membrane is advocated rather than short-circuiting procedures.

5. The importance of making the correct diagnosis lies in the simplicity of the surgical procedure recommended and in the high mortality of untreated cases.

6. It is hoped that this demonstration of the x-ray appearance of a sacculated duodenal diaphragm will condition both surgeons and roentgenologists so that a higher percentage of cases will be recognized before or at operation.

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Discussion

TAGUE C. CHISHOLM: It was a pleasure for me to listen to Dr. Nelson's presentation of this subject. It was a scholarly presentation as well as an excellent case report. The subject is quite close to my heart, as we see more stenoses with diaphragms of the duodenum in children than in adults. By children I am referring to the newborn period because we encounter this condition not a few times within the first few days or weeks of life with intestinal obstruction. I am sure this condition must occur more frequently in adults than is suggested by reports in the literature. Dr. Nelson's suggestion for treatment by local excision and suturing the cut mucous membrane is a good one. The problem presented in infants in the newborn period is a little different. At the Children's Hospital in Boston, Ladd and Gross have reported a number of cases. In the next edition of their book, a few more will no doubt be added. They have had more success with a side-tracking procedure than by local excision. I believe that it is probably more physiologically correct to excise the diaphragm, but the frequent involvement of the pancreatic and bile duct together with collapsed distal bowel in babies increases the technical problems in patients a few days old.

Another thought on the method of embryological development of these diaphragms is that it is associated with a faulty rotation of the head of the pancreas. During development, the dorsal and ventral anlage of the pancreas rotate to the medial and final position, but sometimes the orifices of the ducts do not rotate with them and form a constriction which may contribute to formation of such diaphragms in the duodenum.

JOHN R. PAINE: I would like to know why Dr. Chisholm thinks that in infants it would be more difficult technically to do as Dr. Nelson does than to make a short-circuit operation? I think this is the most unusual diaphragm of the duodenum that I have ever seen.

TAGUE C. CHISHOLM: My reasons for stating that Dr. Nelson's procedure is more difficult in the newborn period are the following. Probably in adults there usually is a fairly wide opening in the diaphragm, enabling such patients to reach adult life. In newborn babies, only pinpoint apertures are present, and flat films of the abdomen show practically no gas going beyond the diaphragm into the distal bowel. The distal bowel virtually is in a state of atresia. The distal bowel is smaller than the diameter of a cigarette while the proximate bowel is several centimeters in diameter. With these dimensions, technically it is usually more difficult to do a satisfactory excision with avoidance of the pancreatic and bile ducts than in adults.

WALLACE I. NELSON: I have nothing to add except that I appreciate Dr. Chisholm's remarks. My experience on this didn't take me into pediatrics.

One other thing to be considered is the presence of other anomalies. I found two cases where patients who had congenital diaphragms died from ruptured diverticulum of the stomach. The cause of death was rupture of the diverticulum in the stomach, associated with obstruction of the diaphragm.

THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

An Evaluation of Its Use in Private Practice

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WORLD WAR II has focused even more sharply the physician's attention on the widespread incidence of neurotic and psychosomatic illness. Both specialists and general practitioners realize that such cases are commonly neglected or given cursory treatment. They also realize that such cases cause more incapacitation and lost man-hours than does any other single group. Physicians agree that 50 per cent or more of their patients present psychogenic problems of varying magnitude, and that the general "aging" of the population will increase this percentage. Unfortunately, the average physician, already overburdened, rarely finds sufficient time to develop an adequate psychiatric evaluation of his patients.

In recent years, many personality tests have been devised, each aiming to evaluate the personality characteristics of the patient. These tests include the Rorschach Test,[7] the Cornell Index,[8] the Minnesota Multiphasic Personality Inventory[1-5] and several others. Each has advantages and limitations. The Rorschach Test is subjective in its analysis, time consuming, and requires the interpretation of a skilled psychologist or specially trained physician. The Cornell Index is chiefly concerned with the detection of borderline clinical states (the so-called psychosomatic disorders), and is less effective in screening hysteria, the pre-psychotic and early psychotic states. The Minnesota Multiphasic Personality Inventory has advantages not only for the psychiatrist, but for physicians in all fields of medicine: it covers a wide range of personality traits including the major psychoses; it may be graded and interpreted by the physician who has not had special training in psychiatry; it can be taken by patients of average intelligence; and it yields reproducible results.

In the course of studying this group of patients, the authors, whose practice is limited to internal medicine, have been able to investigate rather thoroughly the use of the Minnesota Multiphasic Personality Inventory as a means of evaluating further these cases. It is the purpose of this paper to describe briefly the procedure used and to illustrate the use of this test with several case studies. To date, this test has been applied to a total of 550 cases where further psychiatric evaluation seemed indicated.

The Minnesota Multiphasic Personality Inventory (hereafter referred to in this paper as the "MMPI") was originated at the University of Minnesota seven years ago by J. C. McKinley, M.D. (Division of Nervous and Mental Diseases) and S. R. Hathaway, Ph.D. (Department of Psychology). Its authors have attempted to identify and to measure the multiple phases of the subject's personality by using a series of statements to which the testee responds "true," "false," or "don't know." It is not the purpose of this paper to describe how the inventory was developed or to discuss its statistical validity. This information has been published in detail elsewhere by the authors of the test.[1-5]

The MMPI consists of a group of 550 simply worded positive statements, usually in the first person, of which the first 366 statements are routinely used. The test has been published in two forms.* The first form consists of 550 cards, each containing a statement. The patient takes the test by sorting out the cards and filing them into one of three boxes marked "true," "false," and "can't say." We have used only the second form of the test, in which the statements appear in a bound booklet (the so-called "group form"). Using a pencil or pen, the patient fills in the appropriate squares ("true" or "false") after each number representing the corresponding statement in the booklet. This is done on a separate answer sheet. If the patient is unable to decide "true" or "false," he leaves blank the corresponding number on the answer sheet. The average patient requires about ninety minutes to complete the test. Scoring can be done by either the physician or one of his office workers, and requires eight to ten minutes. Scoring is accomplished by

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George E. Fahr, M.D., Donald R. Hastings, M.D., and Starke R. Hathaway, Ph.D., rendered valuable aid in the preparation of this paper.

*The test materials for both forms of the inventory are published by The Psychological Corporation, 522 Fifth Avenue, New York 18, N. Y.

making use of nine cardboard templates, one for each personality trait tested. The "raw scores" thus obtained are listed under the appropriate headings on a convenient permanent record card

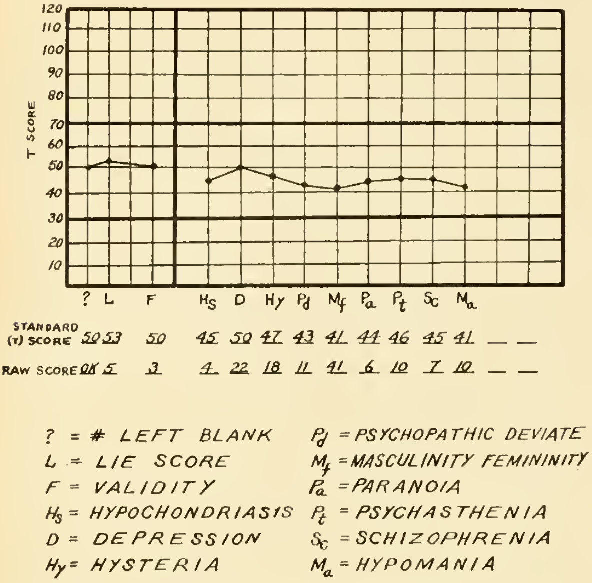


Fig. 1. A normal personality profile together with a key to the symbols used.

(size 5 x 8 in.). By making use of a series of tables in an accompanying instruction booklet, the examiner determines and records "standard scores." The standard scores are then charted graphically on the patient's record card. Figure 1 illustrates the appearance of "a normal" personality profile. The vertical co-ordinate in Figure 1 is made up of the standard score values, and the horizontal co-ordinate the personality traits evaluated. The average standard score values of each item in the profile is considered to be 50. Scores greater than 50 indicate deviation toward the abnormal, with a score of 70 taken as borderline. The first three scores on the horizontal coordinate beginning at the left (Fig. 1) are validating scores designed to indicate the reliability of the record. Should any one of the first three scores exceed 70, the validity of the patient's record should be questioned. Based on these criteria, the reliability of our series of profiles was approximately 90 per cent. The key to the symbols used in the test is shown in Figure 1.

Report of Cases

To illustrate the usefulness of the MMPI in private office practice, we present a series of case summaries with accompanying profiles, each case tending to point out the value of the inventory in the interpretation of a particular type of patient.

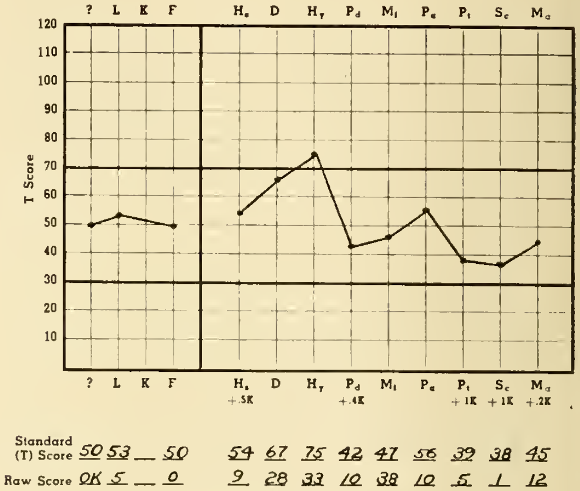
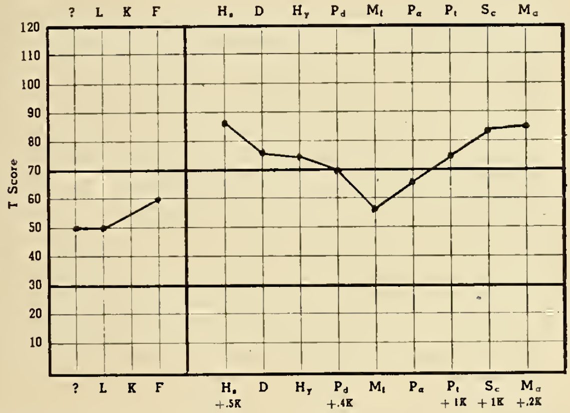


Fig. 2. (Case 1) The personality profile shows hysteria in a patient with essential hypertension and anginal syndrome.

Case 1.—Probably as important as any type of psychogenic problem seen by the practitioner is that of a patient with a definite pathologic condition (such as cardiovascular or gastrointestinal disease) in whom the symptoms are multiplied or accentuated by an added neurosis.

A married woman, aged forty-seven, was first seen on December 14, 1944. At that time her complaints included nervousness, a chronic nonproductive cough, fatigue, frontal headaches, and urinary frequency. Her past history included pulmonary tuberculosis in 1929, requiring eight months of bed rest, appendectomy in 1932, cholecystectomy in 1937, a right nephrectomy in 1940 because of hydronephrosis secondary to a kidney stone, and hysterectomy in 1943 for myomata with hemorrhage. Physical examination at that time showed a blood pressure of 210 mm. Hg systolic, 120 mm. Hg diastolic. X-ray studies showed definite left ventricular enlargement and healed fibroid tuberculosis of the right upper lobe and of the left apex. An electrocardiogram showed only left axis deviation. The pelvic floor was moderately relaxed. Sputum examinations and gastric washings for guinea pig inoculation were all negative for tuberculosis. The blood Wassermann reaction was negative. The impression at that time was one of old healed fibroid tuberculosis of the lung and essential hypertension. During November, 1946, following a period of emotional stress and anxiety over family problems, the patient developed several attacks characterized by syncope, marked agitation, fear of suffocation, and precordial pain. A series of electrocardiograms showed left axis deviation but no other significant changes over previous tracings. There were no measureable changes in the patient's previous cardiac status.

An MMPI was scored by the patient on January 14, 1947 (Fig. 2). This clearly showed hysteria (score 75) and a tendency toward symptomatic depression (score 68). The patient was reassured regarding her cardiovascular status, and the functional problem of hysteria was explained to her. The relationship was pointed out to her between her personal problems at home and her resultant anxiety and hysteria. The patient developed relatively good insight, and when she was seen on February 11 and again on April 1, 1947, she had been doing very well and had had no further attacks.



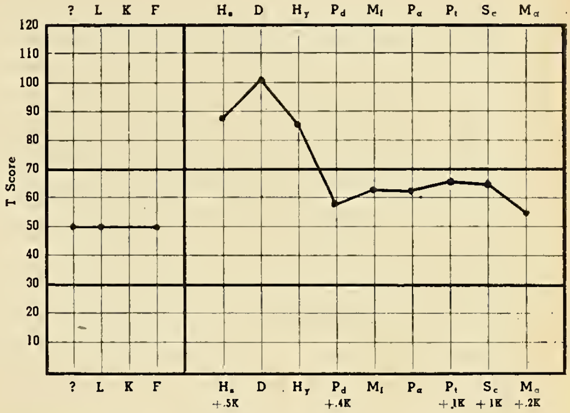
	?	L	K	F	Hs +.5K	D	Hy	Pd +.4K	Mt	Pa	Pt +1K	Sc +1K	Ma +.2K
Standard (T) Score	50	50	__	60	88	77	75	70	57	67	74	83	84
Raw Score	0K	3	__	7	21	28	30	22	24	14	27	34	29

Fig. 3. (Case 2) A grossly abnormal personality curve in a young patient complaining of chronic backache.

Case 2.—By far the most frequently encountered situation is that of a patient with multiple complaints for which no organic basis can be found after a careful physical examination and appropriate laboratory and x-ray studies. Aside from an apparent hypochondriasis, other factors in the personality may escape the physician's attention. In such cases, the patient's MMPI profile may reveal valuable information which can then be used as a guide to further interview.

A boy, seventeen years old, was referred on February 5, 1947, for an evaluation of a chronic back complaint. He complained of "locking and catching" of the lower back and other vague symptoms referable to the entire spine. These symptoms began two years ago after the patient sustained a back strain while lifting a heavy object. He reported that his father had always had recurrent backaches. A previous diagnosis of spinal injury with subsequent manipulative treatment had been given by a nonmedical practitioner. Examination of this patient showed a tall, asthenic type of individual in whom no abnormalities of a physical nature could be found after a complete physical and neurologic examination and after pertinent x-ray and laboratory studies. An orthopedist, in consultation, confirmed the absence of physical findings in this patient. It was felt that this patient's symptoms were on a psychogenic basis, and the patient was asked to take an MMPI test.

The curve shown in Figure 3 indicated that the patient was not only suffering from hypochondriasis, but was hysterical and depressed. Because of the unexpected high scores for schizophrenia (score 83) and for hypomania (score 84), both of which were verified on subsequent interview, this patient was referred to a psychiatrist for treatment.



	?	L	K	F	Hs +.5K	D	Hy	Pd +.4K	Mt	Pa	Pt +.1K	Sc +1K	Ma +.2K
Standard (T) Score	50	50	__	50	88	101	86	58	63	62	67	65	54
Raw Score	0K	1	__	3	21	38	36	17	27	12	22	21	16

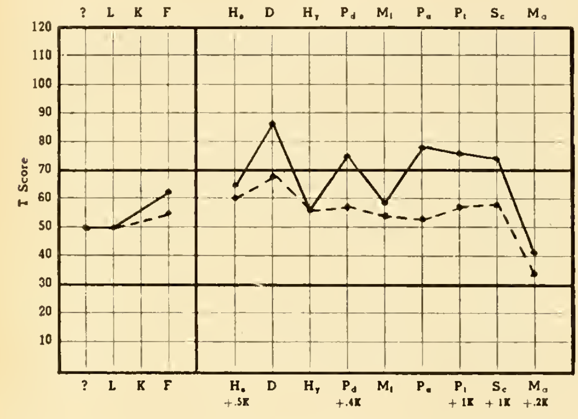
Fig. 4. (Case 3) A patient's personality profile which shows marked depression. The symptom was not obvious clinically.

Case 3.—On occasion an obviously neurotic patient is seen with excessive fatigue and multiple complaints but whose general affect is not that of depression. Such patients may actually be severly depressed (so-called "similing depression") and may be contemplating suicide. Not infrequently a routine history fails to elicit a state of depression which the MMPI may make obvious.

A thirty-eight-year-old man, a college graduate, was seen for the first time on May 6, 1946. His complaints were those of fatigue, nervousness, and palpitation. He was decidedly underweight and was troubled with what he called a "strain of the right groin." A complete physical examination and laboratory work were negative. He was placed on a high caloric diet and was advised to take additional periods of rest. He was seen again about eight months later on January 21, 1947. He had failed to gain weight, and showed no general improvement. The patient took an MMPI test (Fig. 4) at this time. A marked depression (score 101), which had been overlooked entirely clinically, was evident.

However, on questioning this patient in more detail, the depression became very apparent and was freely admitted. It may be further pointed out that this patient's MMPI record shows the "neurotic triad" of hypochondriasis, hysteria, and symptomatic depression which has been encountered frequently in other patients. This patient was referred to a psychiatrist for intensive psychotherapy. The psychiatrist has since reported considerable improvement in the patient's condition.

Case 4.—The "Test-Retest" technique has been used frequently for various reasons. For example, a patient having central nervous system syphilis can be studied in so far as the psychoneurotic and possible psychotic picture is concerned. Following therapy, such a patient can be rechecked with an MMPI test and any changes in the personality makeup noted. Thus the physician is aided in evaluating the efficacy of therapy.



	?	L	K	F	H_s +.5K	D	H_y	P_d +.4K	M_f	P_a	P_t +1K	S_c +1K	M_a +.2K
Standard (T) Score	50	50	__	62	65	88	57	75	59	79	77	74	41
Raw Score	OK	4	__	8	15	39	23	24	32	18	34	30	10

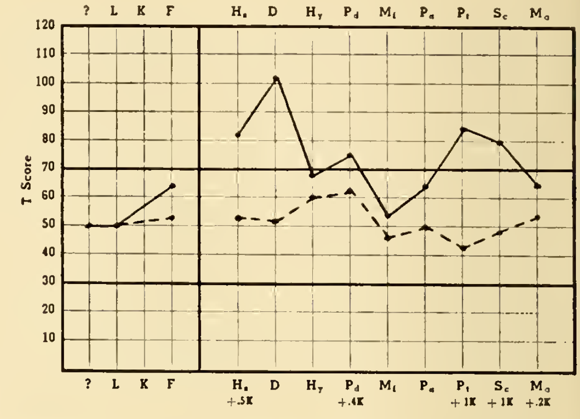
Fig. 5. (Case 4) The personality profile of a patient with paresis, prior to malaria therapy (solid-line curve) and two months after malaria therapy (broken-line curve).

A forty-year-old housewife had asymptomatic paresis. She had received a two-year course of bismuth and mapharsen and had received 5,000,000 units of penicillin. Subsequently she had been given a total of 100 grams of tryparsamide. She was seen on October 8, 1946, at which time a neurologic examination was negative. A short time before she had been seen by a neuropsychiatrist and was pronounced normal except for a moderately severe anxiety state. Her symptoms and complaints at this time were largely those of depression and anxiety. An MMPI test was administered to the patient.

The profile (Fig. 5, solid-line curve) showed a high score of 88 for depression, a tendency toward psychopathic deviation, together with the picture of paranoid, schizoid, and psychasthenic traits. In view of the patient's symptoms and the findings on the MMPI test, a course of induced malarial fever was decided upon. The patient was inoculated with malaria and subsequently experienced fourteen paroxysms of fever in excess of 103 degrees. Two months after completion of the fever therapy, the patient was seen again. At this time she stated that she felt much improved both physically and mentally. The MMPI test was repeated and it showed an essentially normal profile (Fig. 5, broken-line curve) save for a borderline tendency to depression. The psychotic features in the patient's personality were no longer evident in the MMPI profile.

Case 5.—A second example of the "Test-Retest" technique is that of testing before and after operation in a patient with organic disease complicated by a definite emotional problem. It is instructive to note the marked psychic relief in such a patient after a change in the organic situation is brought about.

A twenty-six-year-old salesman was seen on October 17, 1946, complaining of abdominal cramps, diarrhea, and low-grade temperature elevations over a year's time. Physical examination and x-ray studies of the gastrointestinal tract revealed a classic picture of progressive regional ileitis with a palpable mass in the right lower quadrant. The patient was an overly conscientious, worrisome type of individual. He became extremely apprehensive when the situation was explained and operation advised. Prior to surgical treatment, the patient was asked to take an MMPI test (Fig. 6, solid-line curve).



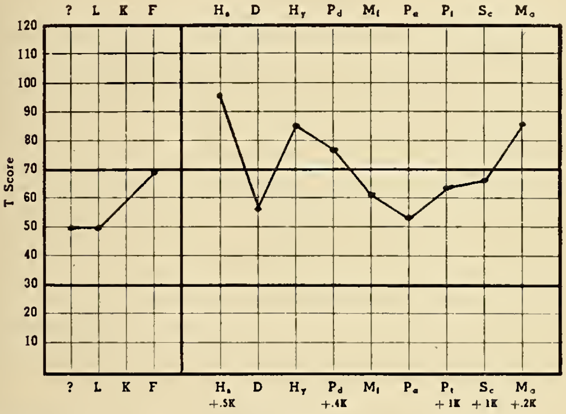
	?	L	K	F	H_s +.5K	D	H_y	P_d +.4K	M_f	P_a	P_t +1K	S_c +1K	M_a +.2K
Standard (T) Score	50	50	__	64	81	101	69	75	53	65	85	80	66
Raw Score	OK	2	__	9	18	38	27	24	22	13	35	32	21

Fig. 6. (Case 5) The personality profile of a patient with regional ileitis, prior to surgical treatment (solid-line curve) and after operation (broken-line curve).

The profile before treatment showed a score of 101 for depression, a score of 80 for hypochondriasis, together with psychasthenic and schizoid tendencies of a moderate degree. A resection of the lower ileum and part of the cecum was successfully carried out two days later, and the postoperative course was uneventful. However, during his hospital stay, special precautions were used to avoid all possible emotional trauma. The patient was carefully followed, and when seen again on February 3, 1947, he stated he felt well, had gained weight, and his physical and mental symptoms had all but disappeared. The MMPI test was repeated at this time (Fig. 6, broken-line curve) and it showed an entirely normal profile.

Case 6.—The group of chronic alcoholics presents a problem in elevation. The differentiation between a "depressed" drinker and one who has an underlying psychopathic personality appears to be important.

A thirty-six-year-old man was first seen on February 25, 1947. He complained of intermittent localized precordial pain, marked tenseness, and nervousness. The patient freely admitted being an alcoholic of long standing. He had been known to disappear completely from home periodically. He had been a member of Alcoholics Anonymous for a period of six months but had given up the program. He had been successful in business, but would always "crack up" because of his alcohol habit. Further history revealed that the patient had been divorced and had remarried. His father had been a chronic alcoholic and was separated from the patient's mother. His mother had remarried. There was considerable hostility between the patient and both his mother and his stepfather. Physical examination and laboratory studies were normal. An electrocardiogram was negative. However the patient showed such motor overactivity as to suggest hypomania.



	?	L	K	F	Hs +.5K	D	Hy	Pd +.4K	Mf	Pa	Pt +1K	Sc +1K	Ma +.2K
Standard (T) Score	50	50	__	70	97	56	86	78	61	53	63	67	86
Raw Score	0K	1	__	12	25	19	36	25	26	9	19	22	30

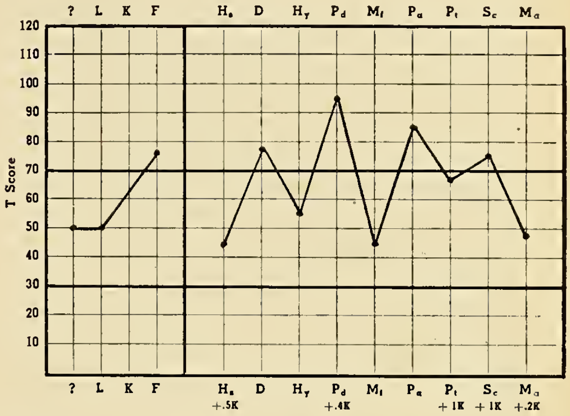
Fig. 7. (Case 6) The personality profile of a chronic alcoholic shows an underlying psychopathic deviation.

The MMPI (Fig. 7) showed not only hysteria (score 86), hypochondriasis (score 97), but also a definite indication of psychopathic deviation ("psychopathic personality") (score 78) together with the anticipated hypomania (86). The patient was referred to a psychiatrist. He subsequently has rejoined the "AA" program.

Case 7.—On occasion, the physician is consulted by a patient who has "made the rounds" of many practitioners. That the patient seems to be a bit "odd" may be obvious, but the possibility of there being an underlying major psychiatric disorder is not always immediately evident.

The patient may be treated symptomatically, and the true fundamental condition could be overlooked. An MMPI could be quickly administered, and this in turn might clarify the problem in such a case.

A thirty-five-year-old saleslady was first seen on November 8, 1946, as a hospital patient. Her complaints were vague and multiple. She was troubled with backaches, indigestion, constipation, restlessness, and marked insomnia. She admitted the frequent use of sedative drugs. Her past history was significant. About eighteen months previously, she had fallen at her place of employment and had suffered a back injury. Much litigation had followed. She had been attended by no less than a dozen physicians in another city over a period of a year and a half, chiefly for complaints about the back, and for nervousness and insomnia. Apparently the possibility of a major psychiatric disorder had not been seriously entertained by the attending physicians. At this time, a complete physical examination, together with x-ray and laboratory studies, was negative, save for a transient glycosuria but with a normal fasting blood sugar. The patient was greatly agitated, depressed, and showed a ready tendency to weep. Careful questioning, together with an interview of the relatives, disclosed paranoid delusions, mendacious tendencies, and possible drug addiction. The patient was asked to take the MMPI test (Fig. 8); this she did without undue urging.



	?	L	K	F	Hs +.5K	D	Hy	Pd +.4K	Mf	Pa	Pt +1K	Sc +1K	Ma +.2K
Standard (T) Score	50	50	__	78	45	78	56	96	45	85	68	75	48
Raw Score	0K	3	__	15	4	34	22	33	39	20	27	31	13

Fig. 8. (Case 7) The personality profile of a woman with a major psychosis which had been previously overlooked.

Although the reliability of the test was borderline, it readily confirmed the clinical impressions by showing depression (score 78), psychopathic deviation (score 96), paranoia (score 85), and schizophrenia (score 75). The patient is now under the care of a psychiatrist in a private sanitarium.

Comment

The Minnesota Multiphasic Personaltiy Inventory has proved to be a valuable aid in identifying and measuring personality deviations. Although the need for somatic treatment of the patient may be perfectly obvious, the need for psychiatric therapy is not always so apparent. Through the use of such a test, the physician is better able to know the relative needs of the patient for psychotherapy. Thus by making use of the balanced approach to the patient's problems, the physician is able to secure results. Oftentimes the test results will aid in the decision as to the need for referral of the patient to a psychiatrist.

Certain patients seem to derive benefit by merely going through the mechanics of taking the test. The finished profile can be shown to selected patients. The problem of explaining to the patient the relationship between symptoms and personality can be placed on a more concrete basis. Patients are often relieved to see that their scores are on the right-hand side of the profile (the major psychoses) are within normal limits.

It cannot be too strongly stressed that one must not go ahead on score findings alone. A complete physical examination together with the necessary laboratory aids is obviously important. The patient's background, from both a hereditary and a constitutional standpoint, must be considered. One must gain an impression of the patient's environment and of the patient's reaction to that environment. The careful elicitation of the medical and psychosomatic history is still of first importance. There is no shortcut for these time-consuming procedures.

As has been indicated, the booklet form of the inventory has been used exclusively by the authors of this paper, largely because of the greater ease of administration and scoring. The authors of the inventory point out that "for college, high school, or professional people, who are used to reading and writing, the results obtained by use of the booklet form are probably almost identical with those of the card form."[6] They strongly urge the use of the card form in testing older persons, disturbed or hospitalized patients, or those of low educational or intelligence levels.

For the most part, patients have no objection to taking the test when it is explained to them that it is merely a measurement of personality traits, that it is not a mental or intelligence test, and that the examiner is not interested in the answers to individual questions. While taking the test, the patient should be comfortably seated and should be alone if possible.

Summary

1. The Minnesota Multiphasic Personality Inventory has been administered by the authors to 550 patients selected from an internal medical practice.

2. The technique of giving and scoring the inventory is described in detail.

3. Seven case histories with accompanying profiles are included as a means of illustrating the use of the procedure.

4. The advantages of this procedure as a means of evaluating the psychogenic aspect of the patient's illness are discussed.

5. It is to be re-emphasized that this inventory is designed to supplement and not to replace a careful physical examination, laboratory workup, and a rather detailed medical and psychosomatic history.

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ACUTE POLIOMYELITIS IN PREGNANCY

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RECONSTRUCTION OF THE EXTRAHEPATIC BILE DUCT

A Modification of the Allen Method

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GIVEN a patient with a history of a previous cholecystectomy, recurrent or persistent attacks of cholangitis or jaundice, the diagnosis of stricture of the common bile duct should be considered. All surgeons agree that the best way to prevent these strictures is care in the performance of cholecystectomy, so that the extrahepatic bile duct is not injured.

In the treatment of strictures of the common bile duct, most surgeons try to anastomose the two cut ends of the common bile duct over a rubber T-tube. The use of vitallium or lucite tubes has to date provided no special advantage over the rubber tube. If the above procedure is not possible, due to difficulty in locating the distal portion of the duct or bringing the ends of the ducts together, a choledochoduodenostomy or choledochojejunostomy (preferably the latter) is usually performed.

In 1945, Allen described a method of anastamosing the open distal end of the transected jejunum to the liver around a tube placed in the short segment of the hepatic duct in the liver sulcus. The jejunum is transected approximately 30 cm. from the ligament of Treitz, and the intestinal continuity is re-established by implanting the proximal segment of the jejunum into the distal segment after the method of Roux. This results in a mechanical arrangement whereby the intestinal current is directed away from the liver. Cotton or silk sutures hold the end of the jejunum securely in the liver sulcus since the scar tissue around the duct opening is very firm and reliable. By inverting the end of the jejunum for a distance of 1.5 cm., two surfaces are placed in apposition which theoretically, at least, have healing properties. The use of the bell end of the rubber catheter is to lead all bile through such a tube and thus produce a water tight anastomosis. By making a vent in that segment of the catheter remaining for a time within the lumen of the gut, a complete external fistula can be prevented for as long as the catheter is left in place. The majority of tubes were removed at the end of twenty-one days.

The first patient treated by the author by Allen's method developed signs of cholangitis three days after operation, which subsided upon withdrawing the catheter on the seventh postoperative day. In Allen's own series three patients had one or two mild, transient episodes of pain, jaundice, chills and fever. At best, a rubber tube acts as an irritant in the bile duct, and it may be questioned if removing such a tube at the end of twenty-one days (or a longer interval) does much to prevent further stricture.

Accordingly, the following modification was used in the treatment of the next two patients with stricture of the common duct.

1. The cut end of the distal jejunum was anastamosed to the capsule of the liver around the proximal end of the common duct to act as a funnel to receive the bile.
2. No rubber tube was used in making the anastomosis.

The patients were explored through a right subcostal incision. In both instances the proximal end of the duct was a bulbous segment flush with the liver substance. This finding is not unusual in the more complete strictures occurring high in the common duct. Also, the amount of fibroserositis on the capsule of the liver in the region of the upper end of the duct is considerable and lends itself admirably for the placement of sutures. The cut distal end of the jejunum was sutured to the liver so as to form a funnel or cup over the upper end of the common duct. No rubber tubing was placed in the duct, as it was felt that even though this dilated duct should contract somewhat, there still would be no obstruction to the flow of bile. Interrupted sutures of No. 000 silk were used to make the anastmosis. The cut end of the jejunum was inverted by a mattress suture, so there was a small serosal cuff inside the lumen. Only two rows of silk sutures were used to make the anastamosis. A penrose drain was left in the subhepatic space of Morrison and brought out through a stab wound inferior to the incision. This was removed on the eighth postoperative day.

These two patients have been followed eight months and one year respectively since operation and have been well. In neither have there been jaundice or symptoms suggestive of cholangitis.

Summary

A modification of the Allen method for reconstruction of the common bile duct is presented. The cut end of the jejunum is sutured to the liver capsule to form a funnel over the upper end of the common duct. No tubes are used in making the anastamosis. Two patients so treated have been well eight months and one year since operation.

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Probably no greater mental trauma is ever inflicted by a physician than when he first tells a patient that he or she has tuberculosis. Material and social problems combined with the psychological problems of separation from family, complete change of living routine, sudden cessation of all activity, ignorance of the disease and what it will mean to him and an unknown future is likely to create in the patient a mental turmoil which is a known detriment to his eventual recovery and return to a useful life.—C. J. Stringer, *Hospitals,* (Aug.) 1946.

CLINICAL-PATHOLOGICAL CONFERENCE

PARATHYROID ADENOMA

A Diagnostic Case Study

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Dr. F. H. Magney: This fifty-one-year-old white female (Case No. 30757) was first admitted to this hospital on July 21, 1939, for a trigeminal neuralgia on the left side which was somewhat relieved by an alcohol injection. Shortly thereafter she underwent an operation on the Gasserian ganglion at the Mayo Clinic where, in addition, a cystic lesion of the right os calcis was curetted and a diagnosis of a giant cell tumor was made. The cyst was packed with bone chips from the left tibia.

The patient was readmitted on October 16, 1941, with a history of having been well since the operation two years before, except for a loss of sensation on the left side of the face. At this time she had noted intermittent pain for the past three months in the posterior aspect of the right lower thigh, especially when bending the knee. There had also been some occasional pain in the right heel. On the day of admission she stumbled down a step, falling and landing on the right knee. Her physical examination was essentially normal except for muscle spasm and swelling above the right knee. X-ray examination revealed a fracture of the lower end of the right femur with angulation, and at the same time a cystic lesion suggestive of a giant cell tumor of the bone was discovered at the site of the fracture. The patient was treated by extension, manipulation, and application of a plaster cast.

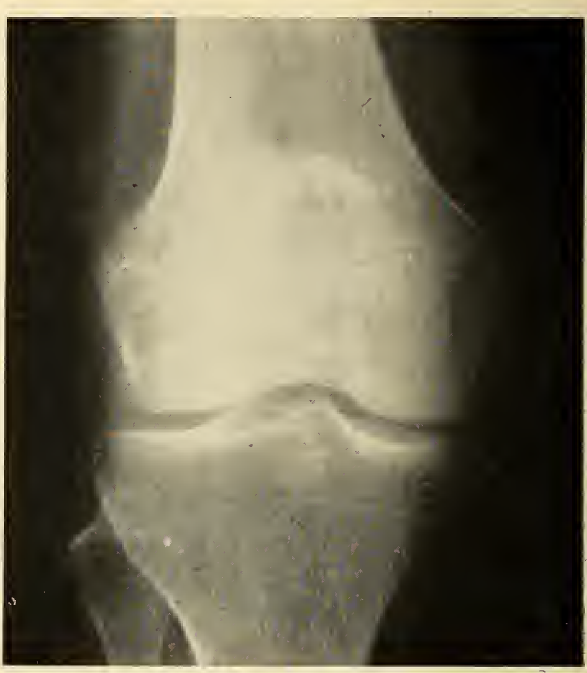

Fig. 1. Cyst in patella.

The chief complaint on the third admission (August 9, 1946) was a dull continuous pain in the left knee since the spring of that year. It had been getting progressively worse and was aggravated by weight bearing, but not relieved by rest. X-ray examination at this time revealed small calculi in the right kidney and areas of decreased density throughout the lumbar spine, pelvis, and ribs with cystic areas in the right ninth rib in the anterior axillary line and the left tenth rib in its posterior portion. There was also a cystic area in the left patella (Fig. 1), in the superior ramus of the right pubic bone, and in the left acetabulum. The alkaline phosphatase was 27.8 King-Armstrong units. The left patella was excised with the aid of Dr. M. H. Tibbetts. A diagnosis of benign giant cell tumor or osteitis fibrosa cystica was made by Dr. A. H. Wells who recommended serum calcium and phosphorus determinations to rule out hyperparathyroidism. Two serum calcium determinations revealed 15.02 and 16.62 mg. per 100 c.c., respectively. The serum phosphorus was normal. Apparently because of the many previous surgical procedures, including (1) tonsillectomy and adenoidectomy, (2) appendectomy, (3) perineorrhaphy, (4) drainage of a breast abscess, (5) hysterectomy, (6) resection of the Gasserian ganglion on the left side, (7) curettement of the right os calcis for supposedly a giant cell tumor and (8) treatment for a pathologic fracture of the lower end of the right femur, the patient refused an exploration for a parathyroid adenoma.

She was readmitted to this hospital for the fourth time on March 21, 1947. A parathyroid adenoma, the size of a large olive, was removed from the left superior parathyroid gland. Gross examination revealed an encapsulated mass measuring 3.5 by 2.5 by 1.7 cm. The cut surface had patchy yellowish gray mottling with an area of cystic degeneration and hemorrhage measuring 2 by 1.5 by 1.4 cm. (Fig. 2). Microscopically the tumor was encapsuplated and was made up of solid masses and cords of rather large, uniformly shaped epithelial cells with small rounded nuclei and abundance of clear cytoplasm with a well defined outer wall (Fig. 3). There was no evidence of malignancy and a diagnosis of parathyroid adenoma was made.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minn., Arthur H. Wells, M.D., Pathologist.

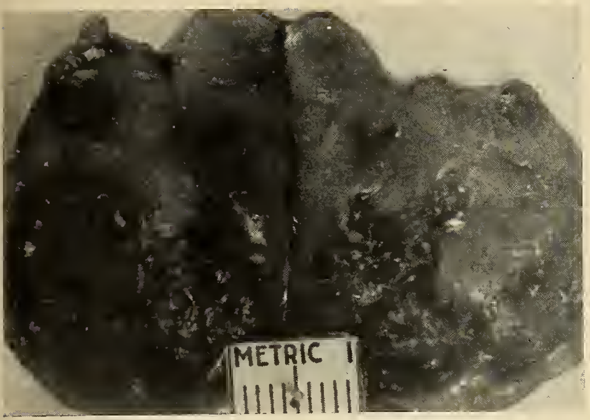

Fig. 2. Sectioned adenoma of parathyroid.

Following surgery, symptoms suggestive of tetany were relieved by the intravenous use of calcium. Postoperatively, the serum phosphorous was 2.61 mg. per 100 c.c. and the serum calcium on two occasions was 7.6 and 6.5 mg. per 100 c.c.

Incidence

Dr. H. H. Joffe: The alertness of the profession in recognizing the symptoms of hyperparathyroidism is the major reason for the increase in frequency of the disease. In recent collective review[23] 96.3 per cent of the twenty-seven reported cases in the literature between 1903 to 1925 were diagnosed at autopsy examinations, as compared to 3.7 per cent diagnosed at operations. During the period 1936 to 1945, of the 174 cases reported, 87.4 per cent were diagnosed at operations and only 12.6 per cent at necropsy examinations. The increasing diagnostic accurracy is further exemplified by the fact that twenty-four cases had been proved at operations at the Mayo Clinic from September 30, 1942, to January 30, 1945, in contrast to fourteen cases observed during the preceding fourteen years.

Norris,[23] in reviewing 322 cases of parathyroid adenomas reported in the literature, found that the location was specified in only 251 cases. The right side of the neck accounted for 132 (52.6 per cent) and the left side for 119 (47.4 per cent). The more specific location was defined in only 197 cases, with 42.7 per cent occurring in the right lower gland and 41.1 per cent in the left lower gland. The right upper and left upper glands accounted for 9.1 and 7.1 per cent respectively. Single adenomas in aberrant positions were recorded in thirty (10.7 per cent) of 281 cases, with nineteen (63.3 per cent) occurring in the mediastinum, nine (30 per cent) within the thyroid gland and two (6.7 per cent) behind the esophagus. Of 322 cases, more than one adenoma was found in twenty (6.2 per cent) of cases.

The age group between thirty to sixty years accounted for 70 per cent of 316 tabulated cases.[23] The incidence was found to be 3 to 1 in women for single adenomas and 4 to 1 in the group of multiple adenomas. The maximum incidence in men occurred a decade earlier than in women. The latter are divided into two phases which extended through and correspond to the child-bearing period, reaching a peak at forty-five years of age.

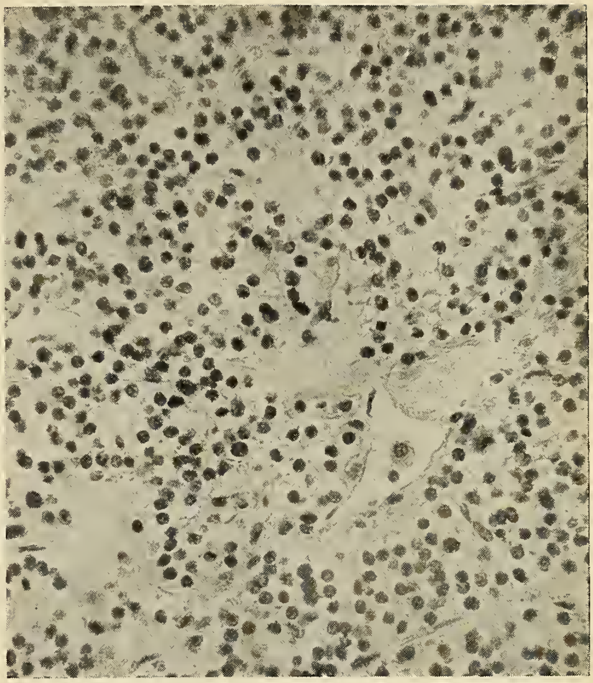

Fig. 3. High power view of parathyroid adenoma illustrating the water-clear type of cell.

Pathologic Physiology

The parathyroid hormone acts to increase the excretion of calcium, and if insufficient amount of calcium is being absorbed from the intestines, or if the output is greater than the intake, the chief reservoirs of calcium, namely the bones, are depleted.[23,30] Why generalized osteoporosis predominates in some patients and osteitis fibrosa cystica is most prominent in others is not clearly understood, but it has been postulated that the latter apparently develops in those in whom loss of calcium is more rapid.[23]

The terminal results of hyperparathyroidism are well known, but the mode of action still remains one of conjecture. At present the mechanism of action is thought to be initiated only by chemical or hormonal stimuli.[27] Prolonged stimulation of the sympathetic nerves to the glands failed to produce any change in the blood calcium.[27] The endocrine relationship to the pituitary gland is open to question. However, Perlman[25] reported a dog having an atypical eosinophilic adenoma of the pituitary gland and at postmortem examination was found to have a coincidental adenomatous hyperplasia of the parathyroid and severe chronic nephritis, together with fibrous osteopathy without brown cysts.

Collip[23,27] feels that the chief action of the parathyroid hormone is directly on solution of calcium salts from bone, while Albright[3,23,27] contends that its chief action is in promoting the renal excretion of phosphate. Recent experiments show that the hormone may act on both simultaneously.[27]

The parathyroids regulate the level of blood calcium, determine the rate of movement from the great calcium deposits, the bones, into the blood stream and tissues, and thence out into the urine.[8] Injection of parathormone causes excretion of phosphorous and calcium in the urine which is usually followed by an increase in the blood calcium with removal of calcium from the bones.[6] Collip showed that excess doses of parathormone in dogs resulted in death in a few days and was preceded by anuria and retention of nitrogenous products.[3] Hueper showed that such dogs dying of acute parathyroid poisoning had calcium deposits in the thyroid gland, mucous membrane of the stomach, lungs, and kidney.[3] It is, therefore, felt that the kidney lesions are only a part of a more generalized process.

The calcium is precipitated out as phosphate salt in alkaline urine or as calcium oxalate in acid urine. Calculi may form in any part of the urinary tract from the renal tubules to the bladder. Calcium may also be deposited in the renal parenchyma as well as the lungs and arteries. With progressive renal calcification or nephritis due to ascending sepsis, the kidney fails to excrete the excess calcium with which it is burdened by the overactive gland. The excess is excreted by the large bowel and the blood level of calcium remains as before.[23] Retention of phosphate, chlorides and nitrogenous products occurs with renal impairment.[23,24,27]

Phosphatase which is an important enzyme in regeneration of bone is also elevated in hyperparathyroidism because nature makes an attempt to form new bone where old bone is being removed.[29]

The order of events in the pathologic physiology of hyperparathyroidism may be briefly summarized as follows:[22] (1) excessive activity of the parathyroid, (2) extraction of minerals from soft tissues and their excretion, (3) mobilization and withdrawal of not only calcium, but earthy alkaline substances from bone, (4) proliferation of osteoclasts to phagocytize the decalcified matrix and proliferation of fibrous tissue to replace the bone.

Primary hyperplasia of the parathyroid glands is the result of adenoma with secretion of excessive amounts of parathormone and depletion of the calcium stores, resulting in generalized osteoporosis or osteitis fibrosa cystica. Secondary hyperplasia is a compensatory mechanism and can be due to such underlying conditions as:[13,20] chronic renal insufficency, severe rickets, osteomalacia, osteitis deformans, fragilitas ossium, multiple myeloma, metatstatic carcinoma of bones and nephrolithiasis.

The exact mechanism of parathyroid hyperplasia in chronic renal insufficiency or renal rickets is debatable; however, retention of phosphate is generally admitted to be the initial stimulus.[2,11,24] Drake, Albright and Castleman were able to produce parathyroid hyperplasia in rabbits by repeated injection of a neutral buffered isotonic solution of sodium phosphate.[11] In renal insufficiency the plasma phosphates tend to be high because the kidney cannot excrete them readily. The high phosphate level lowers the plasma calcium which acts as a stimulus to the parathyroids.[6]

Histology

The normal gland is generally considered to have three types of cells; the chief, water-clear and oxyphil cells. The first two are probably the same except for degree of maturation. Based on size and structure of the protoplasm, these cells are divided into four types; dark, clear, vesicular and water-clear.[6] The chief cells are small and possess dense cytoplasm in contradistinction to the water-clear cells which are large with vacuolated cytoplasm. The other cell types are considered transitional with the great majority of the cells belonging to the intermediate type, thus giving the impression of a progressive development from the dark chief cells through the intermediate types to the water-clear cells.[6] The oxyphil cells possess a dense acidophilic cytoplasm.

Welsh in 1898, in a study of normal glands from forty human autopsies, was the first to distinguish the oxyphil cell from the predominate chief cells and derivatives.[10] He believed that the least specialized cell was what is now called the "water-clear" or "wasserhelle" cell. The arrangement of both the oxyphil and chief cells varied from masses to anastomosing and branching columns and finally cords of a single cell width. True acini formation were only rarely found.

Histologic studies confirm the monophyletic theory of the origin of the various cells.[6,10] Surprisingly enough, little of fundamental importance has been added since the original description of Welsh. Kurokawa,[10] in studying 815 glands removed from 240 necropsies, ranging in age from a seven-month-old fetus up to eighty years of age, found that up to puberty the cells are all water-clear cells containing glycogen but no fat. At puberty these cells begin to decrease and the dark chief and oxyphil cells gradually appear. The dark chief cells contain fat but no glycogen and the oxyphil cell contains neither fat nor glycogen. When the cytoplasm in the chief cell is entirely absent (complete vacuolization) the cell is called "water-clear" or "wasserhelle" cell. At puberty or soon afterwards the pale oxyphil cells gradually appear, at first singly and then in pairs, increasing in number with advancing age, forming large islands after forty to fifty years of age. The dark oxyphil cells occur singly, are not present before puberty, and likewise do not contain fat or glycogen.[10]

Histologically the parathyroid neoplasias usually contain all of the types of cells common to the normal gland.[19] Castleman and Mallory[10] did not find pure tumors of either the oxyphil or water-clear type in their series of neoplasias. Numerous transition forms can always be demonstrated. They believe that the chief cell is the basic fundamental cell with the other cells regarded as degrees of differentiation or as involution forms. Hyperplasis of the parathyroid is characterized by diffuse involvement of all the glandular tissue and occurs in two forms, a more common water-clear cell type and a much rarer chief cell type.[10]

The cells may show a considerable degree of pleomorphism with mitosis, which has often led to an erroneous diagnosis of carcinoma. It is generally agreed that the great majority are clinically benign, rarely recur, invade or metastasize.[10,13,19,23] Burke[8] reported a case of recurrent adenoma apparently due to a transplanted fragment between the muscles of the neck.

Clinical Manifestations

Hyperparathyroidism is pleomorphic in its clinical manifestations. It may be suspected most often in three principal ways: (1) through its bone lesions, (2) its kidney complications and (3) its general somatic effects.

There are two types of bone lesions, a cystic form, osteitis fibrosa cystica, and a diffuse decalcification. Although osteitis fibrosa cystica is the classical form of the disease it is not as common as the form associated with urological symptoms.[12,13,27] Over a ten-year period in sixty-seven cases of hyperparathyroidism, Albright and associates[12] found the classical picture of osteitis fibrosa cystica in only one-third of the cases. Another one-third showed mild and often insignificant degrees of skeletal involvement, and the remainder showed no osseous disease. Norris[23] in a collective review of 322 cases found osteitis fibrosa generalisata in 191 (59.3 per cent). The symptoms resulting from involvement of the osseous system varies from vague aches of pains in the extremities and back, to a truly disabling condition with pathologic fractures, cysts, tumors and deformities.[19,20,23]

The renal complications are three: a diffuse calcinosis, calculus formation, and pyelonephritis complicating the calculi. Norris[23] found associated skeletal and renal lesions in 101 out of 322 cases (31.4 per cent) and renal lithiasis and or renal calcification alone in seventeen (5.3 per cent). Approximately 10 to 15 per cent of all patients with renal calculi have the calculi as a complication of primary hyperparathyroidism. The complication of renal calcification occurs in over 65 per cent of cases of hyperparathyroidism.[27] Keating and Cook[19] found renal calculi in eighteen out of twenty-four cases with bilateral calculi in seven cases. Fourteen of these cases had previously undergone a total of twenty surgical procedures for renal calculi.

The more general somatic symptoms as a result of biochemical changes in the blood and urine are too commonly present in other diseases to be of much diagnostic aid. They include: muscular atony, weakness, fatigue, constipation, anorexia, loss of weight, nausea, and vomiting, polyuria and polydpsia. The latter two occurred in eleven (46 per cent) of twenty-four cases.[19]

Diagnosis

The biochemical and roentgenologic studies and biopsy of the bone lesions are principal aids in the establishment of the diagnosis of hyperparathyroidism.

The demonstration of the biochemical changes is concerned with (1) an increased serum calcium, (2) a reduction of inorganic serum phosphorus, and (3) hypercalcinuria. To the foregoing may be added an increased alkaline phosphatase.

An elevated serum calcium above the normal of 9 to 11 mg. per 100 c.c. may be very slight, and repeated determinations may be necessary in order to establish a definite diagnosis. In twelve out of twenty-four cases at the Mayo Clinic,[19] the average concentration was less than 12.5 mg. per 100 c.c. The values were generally higher in those cases with classical bony changes.

The total calcium is made up of two fractions, calcium proteinate in which the calcium is bound to serum protein and ionic calcium. The former varies with changes in the protein concentration and is not primarily affected by the parathyroid hormone, whereas the ionic calcium is affected by parathormone.[19,21] It is therefore plausible that with a lowered serum protein and a normal total calcium, one may actually have an elevated ionic calcium[19,21] Neither of the calcium fractions can be measured directly; however, both apparently can be estimated from the concentration of total calcium and total protein by the use of the nomogram of McLean and Hastings.[21] Certain conditions such as multiple myeloma and sarcordosis are frequently accompanied by an increased total serum protein and by hypercalcemia secondary to the elevated protein. However, in the experience at the Mayo Clinic,[19] a reduction in serum protein to sufficiently mask hypercalcemia was rarely encountered as a diagnostic problem in hyperparathyroidism. Conversely an elevated total serum protein was a relatively frequent means of avoiding an erroneous diagnosis of parathyroid disease.

The reduction of inorganic serum phosphorus from the normal of 3 to 4 mg. per 100 c.c. is usually slight. In 25 per cent of cases, one or more determinations fell within the normal range, and 17 per cent of cases the level was at the lower limit of normal.[19]

Hypercalcinuria was demonstrated in fourteen of fifteen patients with renal lithiasis in whom hyperparathyroidism was excluded.[26] In 50 per cent of these cases there was evidence of renal damage which may demonstrate that moderately diseased kidneys may excrete calcium in the urine in the absence of other explainable causes. A low level of calcium in the urine, in a concentrated specimen, in the absence of renal disease, as indicated by the Sulkowitch test, practically rules out hyperparathyroidism.[19]

An elevated alkaline phosphatase does occur with hyperparathyroidism and is more commonly seen in the group with classical bone changes. It is believed to be the result of osteoblastic activity and therefore, not pathognomonic of the disease itself.[4,19,23,29]

Roentgenologic examination of the bones in the early stages reveals the trabeculae to be thin and delicate with the cortex so thin that the bone has a ground glass appearance.[23,30] This is best seen in the flat bones such as the calvarium. In advanced cases there is wide spread demineralization with multiple cysts, pathologic fractures,[19,30] expanding tumors and a variety of skeletal deformities. The common sites of the cystic lesions are the jaw, pelvis, long bones, ribs, metatarsal and metacarpal bones.[30] Strock,[28] in reporting the dental roentgenologic findings in forty-five out of fifty-one cases, found that one-half of the cases showed cystic-like cavities in the jaw, malocculsion, osteoporosis and absence of lamina dura.

The diagnosis of giant cell tumor of bone on biopsy or x-ray without further laboratory and metabolic studies should be made with reservation. Goldman[16] reported a brother and sister erroneously diagnosed as giant cell tumors by x-ray in one and by biopsy in the other.

Both were treated successfully by surgical removal of parathyroid adenomata. At present we do not feel that giant cell tumor of bone can be histologically differentiated from osteitis fibrosa cystica.

In summary, the possibility of hyperparathyroidism should be considered in: (1) all cases of neophrolithiasis or nephrocalcinosis, (2) all cases in which there is x-ray evidence of generalized demineralization, (3) all cases of cysts or bone tumors, (4) all cases of giant cell tumors so diagnosed by biopsy, (5) all cases in which there are symptoms referable to the skeleton, especially pathologic fractures.[1,19,23]

The secondary or compensatory hyperplasia of the parathyroids due to some underlying disease must be differentiated from primary hyperplasia (adenoma) of the parathyroid gland. In the former, surgical removal will not cure the underlying pathologic process.

Treatment

The treatment of primary hyperplasia is surgical excision, and it may occasionally challenge the ingenuity of the surgeon to locate the erring gland or glands. Following surgical removal, the serum calcium falls rapidly to normal in a day or two with the inorganic phosphorous returning to normal more gradually.[19] Postoperative tetany is usually not so severe that it cannot be controlled by the usual means.[19] However, Albright[2] stated that severe tetany usually only occurred in patients in whom the level of alkaline phosphatase exceeded 20 Bodansky units before operation.

The removal of a hyperfunctioning parathyroid may invite immediate chemical changes with resultant acidosis. Couch[15] reported a case of acidosis with a carbon dioxide combining power of 19 volumes per cent which was treated with dramatic results by intravenous sodium bicarbonate.

The explanation for the production of acidosis is that the acid radicals, phosphates, sulphates and chlorides tend to be retained in the blood stream while base sodium is freely excreted by the kidneys and the base calcium is retained in the bones.

Summary

We have presented a case of hyperparathyroidism due to an adenoma. This patient presented all of the principal diagnostic features of this syndrome, including (1) multiple bone cysts, (2) spontaneous fracture of bone, (3) generalized decalcification of bone, (4) renal calculi, (5) hypercalcemia, and (6) increased alkaline phosphatase.

In spite of the study of the case by several physicians, including at least one pathologist, an orthopedist, two roentgenologists, a surgeon, and two general practitioners, the diagnosis was not established over a six-year period. Physicians should always consider primary hyperparathyroidism in cases presenting (1) bone cysts, (2) pathologic fractures, (3) renal calculi, (4) "giant cell" tumor of bone, and (5) generalized decalcification of bone.

An incomplete review of the literature has been presented.

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It has been estimated that nearly four per cent of all persons who visit physicians' offices are coughing or expectorating. The alert physician will insist upon a sputum examination of all such patients. Such practice will be rewarded by the discovery of tubercle bacilli in three or four of every 100 specimens examined. The country doctor will often be astonished to discover that a patient with slowly resolving pneumonia has an acid-fast reason for prolonged convalescence.—*Pub. Health Rep.,* Dec. 6, 1946.

CASE FOR DIAGNOSIS

A. J. HERTZOG, M.D., and JULIAN SETHER, M.D.
Minneapolis, Minnesota

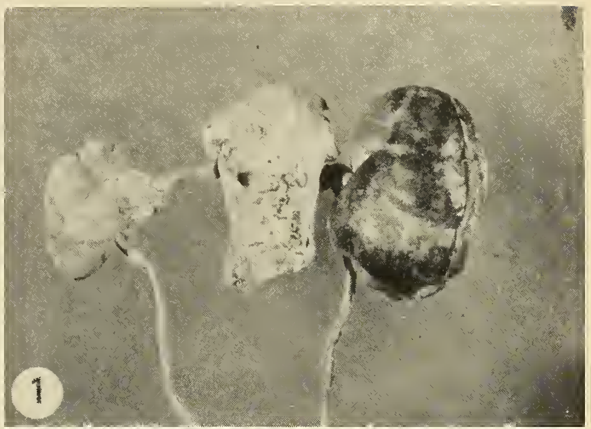
Dr. Julian Sether: This case (A-46-2461) was that of a sixty-six-year-old woman who was admitted to the Minneapolis General Hospital at 11:00 P.M. on November 30, 1946, with a two-hour history of severe sudden nonradiating pain in both lower abdominal quadrants. The pain was associated with nausea, vomiting, and several loose bowel movements. Melena or hematemesis was not noted. The pain was colicky, sharp, and stabbing.

The patient was first seen in this hospital in July, 1938, complaining of polydipsia, polyuria, and dysuria of one year's duration. Blood pressure at this time was 145/82. The diagnosis of diabetes mellitus was established. She was discharged on insulin therapy. She was again admitted in March, 1940, because of some swelling of her ankles. Blood pressure was 150/90. An electrocardiogram showed left axis deviation. The left optic lens was removed in 1941 because of a cataract. In 1942, a cystocele and rectocele were repaired. In March of 1943, auricular fibrillation was present and she was digitalized. In 1945, a midthigh amputation was performed for gangerene of the left foot. The blood pressure was 230/88. The heart showed numerous extrasystoles and a late diastolic murmur at the apex. She continued to take insulin and her diabetes appeared well controlled.

Physical examination on this last and final admission showed her temperature to be 98 degrees; pulse, 58 per minute; respiration, 24 per minute; and blood pressure, 210/90. She was slightly obese and was complaining of severe lower abdominal cramps. The lungs were clear. The heart was enlarged to the left. An early and late mid-diastolic low-pitched blowing murmur was present at the apex of the heart. The second pulmonic sound was slightly accentuated. The abdomen showed a minimal tenderness in the right upper and left lower quadrants. Minimal tenderness was present over the left costovertebral angle. The left mid-thigh amputation was healed.

Hemoglobin was 86 per cent (Sahli). Leukocyte count was 26,900 with 96 per cent neutrophiles and 4 per cent lymphocytes. Urinalysis revealed two plus sugar and numerous pus cells. The blood sugar was 515 mg. per cent and the carbon dioxide combining power of the blood was 62 volumes per cent. An electrocardiogram showed auricular fibrillation and low voltage in all three leads.

The pain persisted. On the second hospital day, she developed a complete anuria. The blood sugar dropped to 65 mg. per cent. The blood urea nitrogen rose from 79 mg. per cent on the third hospital day to 104 mg. per cent on the day of death. The anuria persisted. She became stuporous and had a convulsive seizure on the seventh hospital day. She expired a few minutes after the convulsion.



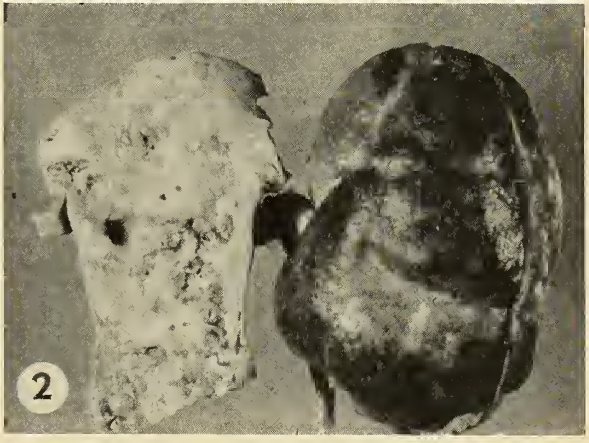


Fig. 1. *(above)* Marked atrophy of right kidney.

Fig. 2. *(below)* Infarction of left kidney with thrombosis of left renal artery.

Dr. Hertzog: This case represents a diagnostic problem. The patient was a sixty-six-year-old diabetic who expired seven days after the onset of severe lower abdominal pain. Within forty-eight hours after the onset of pain, she developed anuria. Death was apparently the result of uremia. Does anyone wish to make a diagnosis?

Dr. F. Gouze: We know the patient had severe arteriosclerosis and hypertension as well as her diabetes. The left leg was amputated in 1945 for arteriosclerotic gangrene of the left foot. One naturally thinks of some complication of arteriosclerosis such as mesenteric thrombosis. Her heart was fibrillating so there is also the basis for an embolic phenomenon. The cardiac murmur suggests a mitral stenosis. The left ventricular enlargement could be explained on the hypertension.

From the Department of Pathology, Minneapolis General Hospital, A. J. Hertzog, M.D., Pathologist.

Dr. Hertzog: The clinical picture was not that of a mesenteric thrombosis, as she was never distended nor showed signs of an ileus. A diabetic can develop chronic uremia on the basis of arteriosclerosis of the kidneys. In this case, the anuria and uremia were of sudden onset associated with severe lower abdominal pain. Does any one else wish to make a diagnosis?

Students: Dissecting aneurysm of the aorta. Thrombosis of a renal artery.

Dr. Hertzog: I think both of these are excellent suggestions in view of what we found at autopsy. How are we going to explain the anuria? Thrombosis of one renal artery would not give you an anuria. A dissecting aneurysm would likewise have to interrupt the blood supply to both kidneys. She never developed the picture of a shock. Dr. Sether will give the findings at autopsy.

Autopsy

Dr. Sether: We were naturally interested in the kidneys in this case. The right kidney was small and atrophic (Fig. 1). It weighed only 20 grams. The right renal artery showed approximately 80 per cent reduction of its lumen by atherosclerosis. The atrophy of the right kidney appeared to be due to arteriosclerosis of this renal artery. However, we cannot completely exclude a secondary atrophy associated with an old pyelonephritis. The left kidney weighed 140 grams. It had a swollen purplish red appearance. The left renal artery was completely occluded by a thrombus which began at the opening into the aorta. The appearance was that of a thrombus rather than an embolus (Fig. 2). On section of the kidney, it was completely infarcted. The heart weighed 350 grams. There was an old rheumatic mitral valve defect as found in mitral stenosis of a moderate degree. A mural thrombus was found in the left auricle. There was severe coronary sclerosis. The abdominal aorta, as seen in the illustrations, showed severe atherosclerosis. The pancreas showed hyalinization of the islands of Langerhans are found in diabetes mellitus.

The anatomical diagnosis was (1) thrombosis of left renal artery with acute infarction of left kidney; (2) renal arteriosclerosis with contraction and atrophy of right kidney; (3) uremia; (4) diabetes mellitus; (5) old rheumatic mitral valve defect; (6) mural thrombosis of left auricle; (7) generalized arteriosclerosis; and (8) ancient amputation of left leg.

Dr. Hertzog: The clinical picture is now explained when we know that from a functional standpoint the patient possessed only one kidney. When this remaining kidney became infarcted as a result of thrombosis of the left renal artery, she developed the pain and anuria.

DECAY OF THE FAMILY?

It is alleged that the institution of the family in Western civilization is going on the rocks. *Life* magazine† discusses the question editorially, pointing out that according to Dr. Carl Zimmerman, Harvard sociologist, "the Western family has collapsed twice before, in Greece about 300 B.C. and in Rome about 300 A.D., in each case marking the decline of those states." Decay of the family in Greece and Rome was marked by corruption, vanishing birth rate, demigration of parents, juvenile and adult delinquency, says *Life*.

Certainly, accumulating statistical evidence seems to lend weight to the warnings from many sources that something is happening to the modern family. Such a state of affairs should be of the gravest concern to doctors of medicine. It is probably inevitable that as civilizations evolve from their simpler, more rudimentary forms to their complex maturity the diseases of industrial middle age and early atomic-age senescence invade their cells destructively. Oswald Spengler elaborated the thesis in his *Decline of the West* some time ago.

If the family decays, what then becomes of the family doctor? The ready answer would be that he becomes the decayed-family doctor. How near to that status is he now? If the decay of the family is marked by the symptoms recited in our first paragraph, should not medical educators, medical societies, and others interested in the future of medicine, give thought to the fact that a falling birthrate will necessitate fewer obstetricians and pediatricians, but probably more gynecologists, genito-urinary practitioners, and psychiatrists? The decayed-family practitioner could conceivably be a combination in one person of formerly separate specialties best calculated to make of him a decayed-family friend and counselor. His premedical curriculum could include law, sociology, the rudiments of police work, philosophy with special emphasis on Spencer and Spengler, abnormal psychology, the rudiments of statism, with possibly some attention to English composition.

The medical curriculum could well omit any attention to all but a certain few infectious diseases, substitute nuclear physics and diseases of irradiation, which may be reasonably expected to increase as more and more radio-active gases and other substances are released. There you have the ideal, shortened course to produce the decayed-family practitioner. Medicine should be ever on the alert to be functional in its service to humanity, wherever that may lead, even to the establishment of the qualifications and training of decayed-family doctors, if need be.—*New York State J. Med.*, July 15, 1947.

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†March 24, 1947, p. 36.

Case Report

THE SURGICAL HISTORY OF A CENTENARIAN

DANIEL J. MOOS, M.D., and JOHN V. FARKAS, M.D.
Minneapolis, Minnesota

THE patient, J.F.D., aged ninety-eight years, was first admitted to the Minneapolis General Hospital on August 24, 1941, with the diagnosis of strangulated right inguinal hernia. He complained of severe pain in the right lower abdomen of approximately twelve hours' duration. There had been no nausea or vomiting. The patient's past history indicated that he had worn a truss for bilateral inguinal hernias for many years. Two years before admission he had suffered a mild heart attack but otherwise had been in good health.

Physical examination disclosed a well-developed, well-nourished, elderly white man suffering from severe pain in the right groin. His teeth were in an excellent state of preservation. The heart was enlarged to the left. The abdomen was not distended, but there was a very tender small mass in the right lower abdominal quadrant over the internal inguinal ring. Considerable excoriation of the skin was present in this region, due to mechanical irritation from a truss. The blood pressure was 168 mm. of mercury, systolic, and 72 mm., diastolic. The only other abnormal physical findings were a small inguinal hernia on the left side and a hydrocele on the right. On the day of admission the hernia was reduced by gentle taxis without anesthesia (DJM). The patient was observed in the hospital for a period of three days. During this time the dermatitis of the groin was treated locally and gradually improved. On August 27, 1941, the patient was sent home feeling well.

Second Admission—Age 99

The admission diagnosis one year later, on August 16, 1942, was strangulated right inguinal hernia.

The history obtained from relatives of the patient revealed that the man had complained of pain in the right side of his abdomen for four days, had had anorexia for several days, with no bowel movements during that time, and had had intermittent vomiting for thirty-six hours. Generalized abdominal tenderness, most marked in the right lower quadrant, severe abdominal distention, and a tender firm mass, 5 cm. in diameter, in the right inguinal region, were noted on physical examination. His temperature was 99° F. Laboratory studies, including blood and urine examinations, were within normal limits, save for signs of dehydration. A diagnosis of small bowel obstruction due to strangulated right inguinal hernia was made, and surgical treatment was advised. With an ilio-inguinal nerve block for anesthesia (1 per cent procaine solution), a right inguinal herniotomy was performed (DJM), revealing a strangulation at the internal inguinal ring. The sac contents included necrotic omentum, a large amount of dark serosanguinous fluid, and a loop of strangulated small intestine, 14 cm. long, which on further examination proved to be ileum. This was very dark in color, lacking in lustre and without visible peristalsis. There was a subserosal hematoma encircling the constricted portion of the intestine.

The internal inguinal ring was incised to allow return of circulation to the compromised portion of the bowel. The necrotic omentum was resected. The loop of ileum was wrapped in warm saline packs for ten minutes, after which it began to resume a more normal appearance, except for one portion, 3 cm. long and 2 cm. wide, which improved in color but through which peristalsis passed very poorly. The viability of this area was questionable; however, because of the extreme age and poor condition of the patient, it was decided not to resect the damaged bowel. As an alternate procedure a portion of peritoneum from the hernial sac was used as a free graft to cover the area, the peritoneum being attached to the intestine with interrupted cotton sutures. A modified Bassini-type repair was effected, using interrupted sutures of 35 gauge stainless steel wire.

Postoperatively the patient was quite ill. His course was complicated by marked ileus which was treated by duodenal suction and by restoration and maintenance of a normal fluid and electrolytic balance. On the second postoperative day, and daily thereafter, he was allowed to be out of bed in a chair. Signs of mild bronchopuneumonia developed on the third day. The temperature varied between 99° F. and 103° F. for the first ten days following surgery, then gradually returned to normal. A slight amount of purulent material drained from the operative wound, but the incision was completely healed at the time the patient was discharged from the hospital on October 6, 1942.

Third Admission—Age 100

The admission diagnosis, seven months later, on March 15, 1943, was a possible head injury with lacerations of the scalp.

According to the history obtained from relatives of the patient, he had been found lying in the street in a somewhat dazed condition, apparently having fallen on the icy pavement. Physical examination on admission revealed an elderly white man who had sustained a scalp laceration 3.5 inches long in the left parietal region. He was somewhat irrational but not unconscious. Further examination showed a well-healed right inguinal operative scar. The blood pressure was 148 mm. of mercury, systolic, and 100 mm., diastolic. The pulse rate was 100 beats per minute. Neurological examination was negative except for signs of mild confusion. The laceration of the scalp was cleansed and repaired under local anesthesia (1 per cent procaine solution) with several silk sutures. On March 18, 1943, a lumbar puncture was performed. The spinal fluid was clear, colorless, and under no increased pressure. The cell count was normal. Roentgenograms of the skull showed no evidence of fracture. The patient was allowed to be ambulatory, and his clinical course appeared to be satisfactory until March 20 when he complained of pain in the left groin. Examination at that time disclosed a tender mass, 7 cm. in diameter, in the left inguinal region which clinically appeared to be a direct inguinal hernia. This was irreducible using gentle taxis; therefore, an emergency herniotomy was performed (JVF).

One per cent procaine solution was used for local anesthesia. A strangulated sliding type of hernia, forming a mass 6 by 8 cm., was found. The hernial sac contained several cubic centimeters of clear yellow

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From the surgical service of the Minneapolis General Hospital.

fluid. The sliding portion of the hernia was formed by a part of the sigmoid colon. After incision of the constricting band at the neck of the sac, no impairment of circulation of either the large bowel or the mesocolon persisted. The neck of the sac was reconstructed, ligated, and the redundant portion amputated. Orchidectomy was performed in order to obtain a more firm repair. Interrupted cotton sutures were used throughout.

The patient was permitted to be out of bed on the first postoperative day. On the fourth day following surgery his temperature suddenly rose to 104° F. and signs of left pulmonary atelectasis appeared. This was treated by inhalation of 20 per cent concentration of carbon dioxide gas, combined with manual chest compression over the left side of the thorax. The patient expectorated a large amount of grayish mucus, following which his condition steadily improved and his temperature receded to normal. He was allowed to be up each day. The skin clips were removed on the sixth postoperative day and the wound was found to be healing by primary intention. At the time of discharge on May 3, 1943, the patient was in good health. He had no complaints, and his operative wounds were well healed.

Fourth Admission—Age 102

The patient was admitted on October 7, 1943, to the neurological service with a diagnosis of cerebral apoplexy. Physical examination revealed an elderly white man in an unconscious state. His entire left side exhibited flaccid paralysis. The blood pressure was 190/80. Laboratory studies indicated normal blood and urine findings. Examination of the abdomen showed bilateral, well-healed herniorrhaphy scars, with no recurrence of hernia. The right hydrocele was again noted.

The patient was in poor general condition during his entire hospital stay, and his prognosis was grave. Despite the administration of 620,000 units of penicillin between October 15 and October 20, for treatment of pneumonia which had developed, his course was downhill, and he expired on November 27, 1945. Permission for autopsy was not obtained. The causes of death were: (1) encephalomalacia, right internal capsule due to thrombosis; (2) generalized arteriosclerosis, and (3) senility.

Summary

1. There is presented the case of a man requiring emergency operation for strangulated inguinal hernia on two occasions, one at the age of ninety-nine years, the other at the age of 100.

2. Local anesthesia was the anesthetic of choice for both procedures.

3. Early ambulation was allowed following each herniorrhaphy.

4. Pulmonary complications followed both operations despite early ambulation.

5. Wound healing was satisfactory.

6. The patient was observed over a period of two years, during which time no recurrence of either hernia was noted.

ARMY ENGINEERS TO BUILD MEDICAL CENTER

What is planned to be the greatest medical research center in the world will be built at Forest Glen, Maryland, by the Corps of Engineers for the Office of The Surgeon General, according to a recent announcement made by Major General Raymond W. Bliss, The Surgeon General. In keeping with technological advances in all fields, based on experiences in the late war, the center will be equipped to anticipate and meet the medical problems of the future as well as to cope with those of the present. The initial cost is estimated at approximately $40,000,000. Construction will be supervised by the District Engineer, Washington, D. C. Engineer District.

Officially designated as the "Army Medical Research and Graduate Teaching Center," the project will consist of a 1,000-bed general hospital, capable of expansion to 1,500 beds; the Army Institute of Pathology building; the Army Medical Museum and Center Administration building; Central Laboratory Group buildings; and the Army Institute of Medicine and Surgery. A working library, animal farm, quarters for the staff and other buildings, are included in the plans.

Located just outside of Washington, the new Army Medical Center will have the advantage of close relationship to the Walter Reed General Hospital, the Naval Medical Center, the medical schools of the District and the proposed new Washington Medical Center, with all of whom ideas can be interchanged. In addition, members of the District of Columbia Medical Society, among them some of the finest specialists in the world, and medical experts from other Government departments, will be available for consultation. The Center will also co-operate with the National Bureau of Standards, the National Institute of Health and the National Research Council.

BIRTHS EXCEED ONE AND ONE-HALF MILLION

Births in May, 1947, are estimated to have numbered 302,000 in the United States, according to figures released by the National Office of Vital Statistics, U. S. Public Health Service. This is 29 per cent more than the estimate for May of last year and it brings the total for the first five months of this year to 1,572,000.

Although the birth rate of 26.4 per 1,000 population including the armed forces overseas for the five-month period, January to May, 1947, was nearly 40 per cent higher than the provisional rate of 19.1 for the corresponding period of 1946, the birth rate has been lower this year than it was in the last four months of 1946 when it reached record-breaking heights. The decrease has taken place in spite of the fact that publications of this Office show that the number of marriages reported ten to twelve months ago and throughout 1946 were unusually large. It is possible that the peak in the birth rate in the latter months of 1946 was due not only to first births to newly married couples, but also to births to families who already had children and first births to couples married before or during the war. The fact that the birth rate has decreased while marriages remained high suggests that now second and third births to established families and first births to persons married more than one year are adding less to the birth rate than they did at the end of last year.

The estimated numbers of births in each of the forty-six states reporting monthly and the District of Columbia appear in the *Monthly Vital Statistics Bulletin* released by the National Office on July 9, 1947.

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
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(Continued from June issue)

D. N. Morse, born in New York in 1826, arrived in Chatfield in 1856 accompanied by his wife, Phoebe Morse, who was a native of Ohio, born in 1834. Their son, Travers, who in 1860 was three years old, according to a census report, was one of the first children born in Chatfield.

Physician and dentist, Dr. Morse was one of the earliest practitioners in Chatfield and certainly was one of the first of any profession to place a card in the recently established newspapers of the village, the *Republican* and the *Democrat,* both of which printed their initial editions early in the autumn of 1856.

In the *Chatfield Republican* of November 22, 1856, Dr. D. N. Morse, dentist, announced that he was one mile east of Chatfield on the La Crosse Road. In a later issue he elaborated as follows:

> D. N. Morse, Physician and Dentist, will be found at all hours except when absent on professional business, at his office one mile from town on the La Crosse Road. Particular attention paid to all branches of the profession of medicine and dentistry.

After 1857 Dr. Morse's cards did not appear in either of the newspapers. His name has not been noted in any of the available early business and professional directories, beginning in 1865.

"**Dr. Murray,** President," was the name appended to an announcement of a meeting of the Fillmore County Eclectic Medical Society to be held on July 31, 1869, which appeared in the *Preston Republican* of July 23, 1869. Inasmuch as this is the only mention of a Dr. Murray in Fillmore County that has been seen by the writer and inasmuch as Dr. J. J . Morey (and the name in the transactions of the society was spelled "Morrey") was a charter member and an early officer of the group, it is assumed that Dr. Mor(r)ey may have been the signer of the notice; furthermore, the two names never appeared in the same notice. The assumption seems justified when it is remembered that in those days material submitted to the local editor probably was written in longhand, which is easily subject to misinterpretation.

Hildus Augustinus O. Nass was born on January 8, 1872, in Winnesheik County, Iowa, the son of H. O. Nass and Anna Nass, both of whom were natives of Norway; his father was a farmer and storekeeper.

Hildus Nass was a pupil in the public schools of Waukon, Iowa, received his premedical instruction at the Preparatorial Department of Luther College, at Decorah, and his medical training at the State University of Iowa, at Iowa City, from which he was graduated on March 30, 1898. On the advice of friends who knew the needs of the locality and the opportunities it offered, in the summer following his graduation he settled in the village of Mabel, Fillmore County, taking up his residence there on July 19, 1898; a month earlier, on June 16, he had obtained his license to practice medicine in Minnesota. In the early days of his practice discouragement sometimes was near; he was young and looked especially young in comparison with the senior physicians of the vicinity, who were elderly men; and besides, as he had said, he was just starting and was not well known.

As it happened, when Hildus Nass was a senior medical student, he had the privilege of assisting in the office of Dr. Walter Bierring, who was then Professor of Pathology and Bacteriology in the medical department of the university. Diphtheria antitoxin had been discovered and was beginning to come into use, and Dr. Bierring recognized its merits and informed his classes. In the second autumn after Dr. Nass had settled in Mabel, an epidemic of virulent diphtheria broke out in the community, taking several lives. The disease struck, among others, a family of eight children who lived southeast of Hesper, Iowa, which is just across the state line and not far from Mabel; two of the children had died and the remaining six were desperately ill when Dr. Nass finally was called in. To quote him:

> I immediately sent to my old friend, Dr. Walter Bierring, for diphtheria antitoxin, for it was new and could not be picked up at any corner drug store, as now. I used the antitoxin in all six cases and the patients all made a happy recovery. As far as I know, I was the first to use diphtheria antitoxin in this community, and from then on I used it in other cases with satisfactory results, not having a death from the dreaded disease.

This experience established the young physician's name in the community and turned the tide of practice. For forty-five years, increasingly esteemed and trusted, Dr. Nass followed his profession in the locality of his original choice. In the later years of his practice his own suffering from a cardiac condition influenced him to make a specialty of the diagnosis and treatment of diseases of the heart. He long was a member of the Fillmore County Medical Society and affiliated county groups, the Southern Minnesota Medical Association, the Minnesota State Medical Association and the American Medical Association.

Early in his career Hildus Nass was married to Maymie Nassie, a native of Fillmore County, who aided him in his useful life. Dr. and Mrs. Nass were members of the Lutheran Church of Mabel.

Dr. Nass died in Mabel on March 27, 1944, at the age of seventy-two years; there were no surviving relatives.

D. F. O'Brien was a physician and surgeon, office one door north of the post office, in Canton, Fillmore County, for a few months in 1883.

On April 26 the *National Republican* of Preston, often quoted in this series of sketches, carried the following barbed announcement—the barb for a physician unnamed:

> Dr. D. F. O'Brien has opened an office in the village of Canton. He deserves a large practice. He will never neglect a patient or disgrace his profession by mal practice such as deprived Commissioner M— of the use of an arm. Dr. O'Brien's card appears in our columns. Call and make his acquaintance.

By August 30, 1883, Dr. O'Brien had departed to practice medicine in Rossville, Allamakee County, Iowa.

Christen K. Onsgard, who was born at the farm home of his parents in Spring Grove Township, Houston County, on April 10, 1863, was one of the eight children of Knute Onsgard and Bergit Larson Onsgard. His sisters and brothers were Karli, Guro, Bella, Marie, Ingeborg, Lewis and Martin. The father and mother were natives of Hallingdahl, Norway, who had come into Houston County in the early fifties.

In the biographical dictionary appended to notes on medical history in Houston County (Guthrey) a sketch of Dr. Lewis K. Onsgard contains information relative to the Onsgard family and other data common to the two physician brothers that need not be repeated in detail here.

Christen Onsgard, like his younger brother Lewis, was a pupil at the public and parochial schools of Spring Grove and helped on the home farm. The brothers, encouraged by Dr. Thore E. Jensen, of Spring Grove, who was married to their sister Ingeborg, decided to become physicians and in 1884 they enrolled at the Eclectic Medical Institute of Cincinnati, Ohio, the school where Dr. Jensen had received his training. In 1887 they were graduated in the same class and when, on June 22, 1887, they were licensed to practice in Minnesota, they received consecutively numbered certificates, Christen, No. 1460 and Lewis, No. 1461.

On receiving his degree, Dr. Christen K. Onsgard returned at once to Spring Grove to begin his medical practice. After five successful years during which he met cheerfully the hazards of country practice of the period, he moved to Halstad, Norman County, Minnesota. On his return to southern Minnesota six years later, in 1899, he settled in Rushford, Fillmore County, there to practice medicine actively for twenty-one years as an able and progressive physician and to play his part as a responsible citizen. In 1920 he moved once more to Halstad and there followed his profession until failing health forced his retirement in 1929.

Early in his career Christen K. Onsgard was married to Emma Louise Dokken, an American girl of Norwegian descent, who was born in Spring Grove. Mrs. Onsgard died in 1925 and when, in 1929, Dr. Onsgard was obliged to give up his work, he returned to Rushford to make his home with his daughter Benora (Mrs. Elvin Humble). Of Dr. and Mrs. Onsgard's five children only one, Lloyd, was living in 1942, in Halstad. Clifford died in 1906, Verna in 1912, Vernon in 1924 and Benora in 1936.

Dr. Onsgard died in Rushford on October 21, 1929, from nephritis. He was a faithful member of the Lutheran Church, was active in the local Masonic lodge (A. F. and A. M.), and was identified with medical organizations: the Houston-Fillmore County Medical Society, the Minnesota State Medical Association and the American Medical Association.

Lewis K. Onsgard (1866-1938), for forty-six years a practicing physician of the village of Houston, in Houston County, spent the first five years, from 1887 to 1892, of his professional life in Harmony, Fillmore County. As stated earlier, a detailed biographical sketch of Dr. Onsgard is included in notes on the history of medicine in Houston County.

Of **Wellington Daniel Parker, Esq.,** who came into southern Minnesota from the East, probably toward the end of the eighties, there has been little information available. There is record, however, that he belonged to the regular school of medicine, that he was licensed in the state on June 30, 1887, receiving certificate No. 1503 (R), which he filed in Fillmore County on December 13, 1887. For a time he was in Spring Valley and by 1890 he was in Lanesboro. It has been recalled by an elderly resident of Lanesboro that in the middle nineties Dr. Parker died in that village while still a young man and that during his terminal illness his mother came from the East to see him.

James Henry Phillips, the son of parents who were natives of Tyrone County, in the North of Ireland, was born at St. John's, New Brunswick, on February 28, 1852. Five years later the family moved to Chicago, Illinois, where James Henry grew up and received his education; at one period he was employed as an engraver. Of the other members of the family little information has been available; his brother William, became a big-league baseball player with the Cleveland and Brooklyn teams between 1880 and 1890.

In 1878, immediately after his graduation from Rush Medical College, young Dr. Phillips practiced medicine in Chicago for a short time, but in June of that year he was establishing himself in Fillmore County, Minnesota, in the village of Wykoff, Fillmore Township, and in the following August he went briefly to Chicago to be married to Alice Van Osdel, of that city. Dr. and Mrs. Phillips had two children, John and Lucia, who were born in Wykoff.

Wykoff, in the seventies and early eighties, was a thriving, incorporated village, on the Southern Minnesota Railroad and connected by tri-weekly and weekly stages with the settlement of Fillmore and Watson Creek, respectively. There were mills of various sorts, hotels, wagon shops and machine shops, a German newspaper, two churches and several stores. Dr. Phillips, in addition to practicing medicine, operated a drug store, at first in association with Mr. Jorris and later with Dr. Calvin H. Robbins, with whom he had entered partnership in medical practice. Dr. Robbins, twelve years older than Dr. Phillips, had been in the county, boy and man, since 1859, in medical practice since 1866, and in Wykoff since 1875.

By late 1884 Dr. Phillips had moved from Wykoff to Preston, because of better opportunity, and in that village he spent the next eighteen years. There his chief medical contemporaries before the turn of the century were George A. Love, Henry Jones and Lyman Viall; in 1900 and 1901 came William D. M. Beadie and Wendell B. Grinnell.

Throughout his residence in the county Dr. Phillips shared in medical affairs. Beginning in January, 1880, he was county coroner for seven successive years, and from 1892 to 1895 he again held the office. After the "Diploma Law" of 1883 was passed, he received license No. 551 (R), given on December 31, 1883. In 1886 he was a member, with Dr. Love and Dr. Robbins, of the newly created medical examining board of the Bureau of Pensions of Fillmore County. At the annual meeting of the Minnesota State Medical Association, at St. Paul on June 19, 1890, he was elected to membership and there is record of his attendance at meetings thereafter and of his serving on the Committee on Necrology in 1893. In 1904 his name appeared on the roster of the new Houston-Fillmore County Medical Society.

As a public servant in civic capacity he played a useful role as well, serving several terms as mayor of Preston and many years as a member of the board of education. In 1887 he was a member of the village council. In 1889 he was a representative from his district to the state legislature. He was a member of the Presbyterian Church and of various fraternal organizations, among them the Masons (A. F. and A. M.) and the Benevolent and Protective Order of Elks.

In the early eighties Alice Van Osdel Phillips died, and in 1888 Dr. Phillips was married to Carrie Conkey, of Preston. Of this marriage there were three children: Delia, who died in infancy, William Conkey and Elizabeth.

A capable and honest physician—his son William has described him as being too honest and too articulate to be very popular—James H. Phillips was also a man of cultural background and formed literary taste, as reflected by his excellent and extensive library. The son, before he had finished high school, had read most of his college English courses from the books on his father's shelves.

From Preston Dr. Phillips moved in 1912 to Westlock, Alberta, Canada, where he carried on an arduous practice; members of his family have said that his death, on August 21, 1921, was the result of overwork. In 1943 there were living of the family: Mrs. Phillips, making her home with the daughter, Elizabeth Phillips (Mrs. L. M.) Pernell, in Dubuque, Iowa, and the son, William Conkey Phillips, of International Falls, Minnesota. John and Lucia, children of the first marriage, had died many years previously, as had the members of the original family group in Chicago.

Horace W. Pickett, a son of David Pickett, was born on July 5, 1822, in Washington County, New York, as were his older brothers, William, Edwin and Joseph. When the sons were young men they moved from New York with their father to become pioneer settlers near South Bend, Indiana.

Horace Pickett obtained his medical education at Utica, Oneida County, New York, where his uncle, Daniel Pickett, was a professor. In 1855 or perhaps a year later, then a practicing physician, he came from New York into Minnesota with his wife, Christiana L. Pickett, to the village of Carimona, Carimona Township, Fillmore County, following by several years his father and his brothers, William, Edwin, Joseph and, probably, Philo and Alonzo and his sisters, Nancy and Lorissa. The Picketts were the first settlers of Carimona; indeed, it was Dr. William C. Pickett who platted the settlement and founded it on his own land. Of the little colony Edwin Pickett returned to Indiana before 1862 but later came back to Minnesota to live, a fact which the following paragraph in the *Preston Republican* of June 28, 1862, gave presage: "An early settler, Edwin Pickett, Esq., one of the first settlers of this county, called on us the other day. He was looking well. At the present time he resides at South Bend, Indiana. He informs us that he prefers Minnesota to that state as a place of residence. He was a good citizen when here and his loss was felt when he left."

In Carimona and the surrounding community, Dr. Horace W. Pickett for many years practiced medicine and took part in civic and educational affairs of the community. An able and progressive physician, he was one of the charter members of the Fillmore County Medical Society, in 1866, and he otherwise contributed to the improvement of medical practice in spite of the fact that he was, as one of his nephews has said, so decided in his opinions that he antagonized people and lost their patronage. On an occasion when he had been called on a confinement case and arrived to find a midwife trying to make an instrumental delivery by means of a long pair of scissors, it would seem that a decided opinion was justified.

In the late winter of 1883 and 1884 Dr. and Mrs. Pickett disposed of their home in Carimona and removed to Welsh, Louisiana, in order to be near their only child, Lillie, who recently had been married to W. B. St. John of that place. Seventeen years later Mrs. Pickett died in Louisiana. Wishing to be once more with those of his father's name, Dr. Pickett, in the spring of 1901, old and frail though he was, traveled alone to Minnesota. He became ill en route, and on the day after his arrival in his pioneer home his death occurred. He was buried in Carimona Cemetery where are the graves of his old friends and of his own people: his father and mother, a sister and four brothers.

William Cowan Pickett, born on November 28, 1818, in Washington County, New York, was the son of Mr. and Mrs. David Pickett and the brother of Edwin, Joseph, Horace, Philo and Alonzo, and Nancy and Lorissa Pickett. Where he obtained his medical training has not been learned, but inasmuch as his brother Horace W. Pickett, studied at Utica, New York, where Daniel Pickett, an uncle of the brothers, was on a teaching staff, perhaps William C. Pickett also was a medical student there.

When he was a young man and already a qualified physician, William Pickett emigrated with the family from New York to Indiana and settled with them near South Bend. On the outbreak of the War with Mexico (1846-1848) he enlisted for military service and was appointed a surgeon in the United States Army.

After the war, bound on a new venture in pioneering, in the autumn of 1852 he traveled from South Bend by ox wagon with two of his brothers, Edwin and Joseph, and another young man into southeastern Minnesota Territory. They came with the view of making permanent homes, and in what was soon to be Fillmore County (March 5, 1853) they found conditions to their liking. When in a few weeks they returned to Indiana, it was to spend the winter disposing of their local property and completing preparations for their trek to Minnesota in the following spring. "On June 1, 1853, conditions being right for the maintenance of their stock on the long trip across the prairies," one of Dr. Pickett's nieces has written, " a company of four of the Pickett families (the households of David, Edwin, Joseph and William) who wished to remain together came back to the place where the three brothers had set their stakes the fall before." They were three weeks on the way.

William Pickett was accompanied by his young wife, Phoebe Means Pickett. On July 4, 1853, in the new settlement in Fillmore County, Dorso Leon Pickett was born, their first son and the first white child born in the community. In the next few years Dr. and Mrs. Pickett became the parents of two more children, Ida, born in 1854, and Ives, in 1859.

As soon as the land was opened for pre-emption, Dr. Pickett took a claim with his brother Edwin and laid out the village of Wahpeton. He evidenced his confidence in the site and the prospects by building as soon as he could a roomy, comfortable stone house as a home for his family. Owing to a clerical error the name of the post office was recorded as "Warpeton;" the settlers rejected this misnomer and chose still another Indian name, that of Chief Carimona (translated, The Walking Turtle), which duly was recorded. Before the change was made, however, W. C. Pickett served as sheriff of "Warpeton Precinct," in 1854. For a time at Carimona Dr. Pickett did a flourishing real estate business, in the conduct of which, being an ethical man and, like his brother Horace, of decided opinions, he refused to sell a lot to any one who proposed to dispense alcoholic liquor. In addition to founding a village, he was at the same time efficiently running a sawmill, operating a blacksmith shop with Joseph Pickett and a flourmill with H. Johnson, and was practicing medicine reliably.

Dr. Pickett's medical practice extended over a wide territory. Settlers were few and scattered; there were only thirteen families in the county on January 1, 1854, and on that date, it has been noted incidentally, William C. Pickett and Daniel (David?) Pickett were possessors of land in township 102, range 11; also that in the spring of 1854 "preaching" was held in the home of David Pickett. Perhaps the first practicing physician to settle within the borders of the present Fillmore County, Dr. Pickett certainly was one of the first six physicians, with Dr. Nelson W. Allen and Dr. Augustus H. Trow, of Chatfield, Dr. J. Early, of

Spring Valley, and Dr. Erastus Belden and his son Dr. Wallace P. Belden, of Hamilton and Spring Valley, all of whom are said to have come in 1853.

A good citizen, versatile and public-spirited, Dr. Pickett was active in civic affairs and local politics. Although in 1857 he was defeated for the office of county coroner, he was, in 1858, overseer of the poor and, from January 4, 1858, to January 4, 1860, he served as judge of probate court of Fillmore County and for the same two years as county sheriff. With regard to one of his less happy experiences as candidate for sheriff, the friendly *Chatfield Democrat* on October 9, 1858, stated with some bitterness:

> The Black Republican Party claim to be "the friends of free discussion," but have a poor way of showing it. Dr. W. C. Pickett, our indefatigable and worthy candidate for sheriff, in a discussion at Spring Valley a few days ago, was hissed and insulted in a manner worthy only of a crowd of "Negro worshippers," by Black Republicans present. This is free discussion with a vengeance.

In the late sixties Dr. Pickett left Carimona and the state. Carimona, his pride, was not to become the city of his dreams. Once the most promising village in the county, the county seat from March 20, 1855, to April 26, 1856, a key point on the thronging stage route from Galena and Dubuque to St. Paul and famed for its hostelry, the Carimona House, in the late sixties the village was left a few miles to the south by the Southern Minnesota Railroad. It was then that Dr. Pickett moved to Illinois, where he spent the remainder of his life.

M. G. Pingree first announced himself in Spring Valley, Fillmore County, as far as the writer has been able to learn, in the issue of August 11, 1870, of the local newspaper, *Western Progress,* and he was then in partnership with Dr. J. J. Morey, office in the Rogers Drug Store, the notice being dated as of June 22, 1870. By August 24 of that summer these physicians and surgeons were publishing separate announcements. Dr. Pingree, still in the Rogers Drug Store, stated that specialty was made of treatment of diseases of the eye and ear.

On August 25, 1870, there was announced the marriage of Dr. Pingree to Miss Frances E. Terrill, of Bath, New York, the ceremony having been performed by the Reverend N. C. Chapin; the editor, in the manner of country editors of the day, expressed affable if robust congratulations.

In January, 1871, Dr. Pingree expanded his professional announcement by informing the public that he was prepared to treat all chronic diseases of the eye and ear according to the most approved system, three years' practice in the Philadelphia hospitals (he stated) being sufficient guarantee of experience.

Whether or not the position of the space allotted was of significance, these cards or notices of Dr. Pingree appeared for many months in a different part of *Western Progress* from the cards of the other physicians of the village. Finally his name appeared in the same column as the names of his colleagues, but at the bottom, and by gradual degrees ascended to the top. By September, 1872, Dr. Pingree was calling himself an eclectic physician; by March, 1873, his name ceased to appear.

(To be continued in the August issue)

President's Letter

TUBERCULOSIS IN MINNESOTA

Throughout territorial days and for approximately the first quarter of a century of statehood, the climate of Minnesota was widely advertised as possessing curative value for those who suffered from consumption. Therefore, large numbers of families with one or more members suffering from tuberculosis migrated to this area. Thus in some years 15 per cent or more of deaths from all causes were reported to have been due to tuberculosis. It was this disease more than any other which caused the Minnesota State Medical Association to arrange for a State Board of Health in 1872. This was the third such board in the nation. Early in the present century, moreover, efforts of members of the State Medical Association brought about construction of sanatoriums in various parts of Minnesota. Minnesota physicians also supported the veterinarians in control of bovine tuberculosis. In 1895 those who sold milk in Minneapolis were required to have a license, which was not issued unless all their cows had been tested with tuberculin. This was the first city in the nation to make such a requirement. In 1923 the eradication of bovine tuberculosis was placed on a state-wide basis and Minnesota achieved a modified accredited rating in 1935.

These measures resulted in a decrease of mortality, of morbidity, and of infection attack rate from year to year. Through the educational campaign of the Minnesota Public Health Association and its component societies, people became so well informed concerning this disease that a state-wide attack by the Minnesota State Medical Association became feasible. Therefore, in 1940, a program was organized by the committee on tuberculosis of the Minnesota State Medical Association. Every county and district medical society appointed a committee on tuberculosis. The physicians of Meeker County were the first as a society, in the nation, to develop an effective tuberculosis control demonstration. The results of the work of this society and its allies are reported in the June issue of Minnesota Medicine. Physicians of McLeod County were second to undertake such a program. Other counties, such as Dakota and Steele, have conducted extensive chest surveys.

The idea evolved of accrediting whole counties, somewhat after the method of veterinarians, but on the basis of tuberculosis control among human beings. In 1941, Lincoln County was the first to be accredited, and now twelve counties are accredited. Next came the idea of certifying schools with reference to tuberculosis control programs in progress. Approximately 500 schools have already been certified.

The members of the State Committee on Tuberculosis have manifested concern over the counties within which are the three largest cities of the state; namely, St. Louis, Ramsey and Hennepin counties, where there is the greatest concentration of tuberculosis in the state. The physicians of St. Louis County, a few years ago, offered photofluorographic inspection of the chest to its entire citizenry of slightly more than 200,000. Already more than half of the citizens have responded. In Hennepin County the Medical Society has received enough support and aid from the Division of Tuberculosis Control of the United States Public Health Service to conduct a city-wide chest survey in Minneapolis. This began early in May, 1947, and 400,000 citizens more than fifteen years of age are being offered photofluorographic inspection of their chests. This is the largest survey of its kind that has ever been undertaken in the United States. In the June issue of Minnesota Medicine appears a comprehensive article on such survey work by H. E. Hilleboe, formerly Director of the Tuberculosis Control Division of the United States Public Health Service, and now Assistant Surgeon General. A city-wide chest survey is being contemplated in Saint Paul by the Ramsey County Medical Society.

In the August, 1946, issue of Minnesota Medicine, the State Committee on Tuberculosis published what it considers an ideal program for any county or district medical society. For many years the ideal program has been in effect in most of the ten counties served by the Southwestern Minnesota Sanatorium and the four counties in the Riverside Sanatorium district. Recently, in the Riverside Sanatorium district, tuberculosis was found to have been completely eradicated in 219 schools.

The State Board of Health is co-operating splendidly in the program of the State Medical Association. Any county or district medical society is free to request assistance from the State Department of Health.

In 1918 there were more than 2,500 deaths from tuberculosis in Minnesota, but only 628 in 1945. Already the Committee on Tuberculosis is about to abandon the word *control* and substitute *eradication.*

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

STATE MEETING A SUCCESS

THE ANNUAL MEETING held in Duluth, June 30 and July 1 and 2 was a great success from the standpoint of scientific interest and attendance.

The Southern Minnesota Medical Association prize for the best scientific exhibit by individuals went to Dr. Arthur H. Wells and Dr. Harold H. Joffe for their pathological anatomy exhibit, with honorable mention going to Dr. William V. Knoll for his kodachrome trasparencies of pathological specimens. The exhibits by the Mayo Foundation and Mayo Clinic were outstanding.

The total registration was 2,494, of which 1,099 were physicians and 333 were Woman's Auxiliary members.

The following officers for 1948 were elected:

President: Archibald E. Cardle, Minneapolis
First Vice President: J. R. Manley, Duluth
Second Vice President: G. I. Badeaux, Brainerd
Secretary: B. B. Souster, Saint Paul (re-elected)
Treasurer: W. H. Condit, Minneapolis (re-elected)
Speaker of the House of Delegates: C. G. Sheppard, Hutchinson
Vice Speaker: Haddon Carryer, Rochester
Chairman of Council: Frank J. Elias, Duluth
Councilor of Third District: L. G. Smith, Montevideo
Councilor of Sixth District (to fill the unexpired term of A. E. Cardle): O. J. Campbell, Minneapolis

The 1948 State Medical Association meeting will be held in Minneapolis.

LABORATORY ABUSE

THE TEACHING of medicine as conducted today in the average medical school has brought forth a crop of young physicians who seem to depend too much on laboratory procedures. Much of the bedside teaching in these schools has drifted into the dialectics of mechanised and biochemical data. The rapid strides in biochemical studies, the extension of mechanical procedures in contrast to the good history and physical examination, has crowded out clinical perception and dulled clinical judgment.

We must reverse this tendency and insist on a good analysis of a history and a physical examination before any laboratory investigations are done.

Thirty years ago, a wise clinician, noting the advent of the x-ray, electrocardiography and biochemical studies as applied to clinical medicine, made the pronouncement that all the aid of mechanical means and biochemical procedures has not shortened by one minute the making of a good clinician. No one decries the value of these laboratory methods or their growth. One does decry their unstinted use, particularly in the private hospital and office. The tendency of today, by the excessive expense of these laboratory techniques, is to "kill the goose that laid the golden egg." In fact, therein alone lies the only reasonable justification for those who advocate some form of the much tossed about shibboleth, "socialized medicine." To that thought we might add, laboratory technology is going to increase and its clinical application is going to multiply, which means that the necessity and justification of endowed laboratories to cushion the expense is obvious. A practical example of this type of cushion is the State Board of Health Laboratories.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

AGAIN during these summer months outbreaks of poliomyelitis are making their appearance in many sections of the country. Last year 25,191 cases occurred in the nation, 2,882 of them in Minnesota. No one can forecast how many cases will occur this year or how badly the communities in this area will be affected. Medical science, unfortunately, cannot as yet prevent an epidemic or even one case.

Physicians in this area, as well as elsewhere, are aware of the multitude of problems poliomyelitis presents. Treatment of the disease is likely to be prolonged and extremely costly, requiring the services of many specialists. Too often the patient's family looks to the physician for advice and guidance far beyond the immediate problem of medical care.

In times such as these, it is helpful to physicians to know that there are others prepared to share these troublesome burdens. In addition to making possible epidemic aid, education, and scientific research, the National Foundation for Infantile Paralysis is pledged to assist financially those patients who require such help. Through their generous contributions to the March of Dimes, the American people have made this possible. Hospital bills, salaries for physical therapists and nurses, purchase of special equipment, and the many other charges which may comprise the essentials of good medical care may be paid for by the chapters of the National Foundation when necessary. Local chapters of the National Foundation are scattered throughout the United States. There is one in or near your own community. Your local health officer can furnish you with the address of the chapter nearest you.

Physicians serve on the local chapter's Medical Advisory Committee, guiding the chapter in developing medical care programs and solving allied problems. Physicians are urged to co-operate with the nearest National Foundation Chapter. Notify the chapter when a poliomyelitis patient comes under your supervision. Make certain that the family of your patient knows of the chapter's existence and willingness to assist. By so doing you will be performing an essential service to your patient and relieving yourself of many unnecessary burdens.

E. J. Simons, M.D.

FOLIC ACID IN PERNICIOUS ANEMIA

With the discovery and synthesis of folic acid and its availability for the therapeutic use, the question arises whether the use of liver in the treatment of pernicious anemia should be abandoned and folic acid substituted. The answer is no; and the reason is that a certain number of patients suffering from pernicious anemia will develop neurologic symptoms when treated with folic acid alone.

Folic acid or pteroyl glutamic acid has been obtained from yeast and liver and can now be synthesized. It has been shown to be identical with liver L casei or norite eluate factor, vitamin M, and Vitamin B_c. These various preparations were shown to be of value in the prevention and treatment of anemia in chicks and monkeys.

There is no doubt that folic acid is effective in producing remissions in pernicious anemia similar to those obtained by liver. That the folic acid content of liver preparations is not the sole antianemic factor in liver extract is shown by the fact that folic acid in the dosage contained in effective liver extract is not sufficient to cause remissions in pernicious anemia. If folic acid is used in the treatment of pernicious anemia, the use of liver extract is also advised, or the patient should be watched closely for the development of neurologic symptoms. That being the case, no economy is obtained for the patient through elimination of professional visits. The main reason, however, for not substituting folic acid for liver extract is, as was stated, that a certain number of patients with pernicious anemia will develop subacute combined sclerosis if treated with folic acid alone. In the presence of neurologic involvement, folic acid is not effective, whereas liver extract in large dosage has definite value.

LEMON JUICE AND TEETH

The announcement by Stafne and Lovestedt* that the excessive use of lemon juice may be harmful to the teeth was undoubtedly a new idea to most dentists as well as physicians. According to their observations, lemon juice can cause a distinct loss of enamel structure of the teeth as shown by a hypersensitivity of the teeth to thermal changes—absence of stain lines, defects in the enamel which have usually rounded margins in contrast to the sharp margins produced by wear, and the projection of fillings above the tooth surface. Ordinarily, the tooth and filling wear down equally so that a projection of a filling suggests tooth destruction beyond nerve wear.

Lemon juice is rich in Vitamin C as everyone knows, and its value in preventing scurvy among mariners was early discovered and utilized. It has been used to some extent in reducing diets, for rheumatism, constipation, and colds where its value is open to considerable question. Children frequently suck lemons, and the authors have observed individuals who have suffered defects in the labial surfaces of the upper teeth as a result of this habit.

The observation that excessive use of lemon juice can be detrimental to the teeth—perhaps more often in individuals who have less buffer action in the saliva—is one that should be borne in mind and doubtless can be confirmed. Because lemon juice in excess may be injurious to the teeth is, of course, no reason for eliminating it from the diet and thus sacrificing its valuable content of Vitamin C.

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*Stafne, Edward C., and Lovestedt, Stanley A.: Dissolution of substance of teeth by lemon juice. Proc. Staff Meetings Mayo Clinic, 22:81, (March 5) 1947.

THE MAYO MEMORIAL

THE increased cost of construction has made necessary a substantial increase in the goal set for the construction of the proposed Mayo Memorial on the University of Minnesota medical campus, bringing the total to $3,000,000. The State Legislature appropriated $750,000 in 1945 for the Memorial, an an additional $1,160,000 had been subscribed by corporations and individuals. In view of increased cost of construction, the last Legislature made a second appropriation of $750,000 contingent upon the raising of a like amount by private subscription. This meant that the Mayo Memorial Committee had to raise an additional $340,000, if the original undertaking was to be carried through. Some $90,000 of this $340,000 had been raised by the middle of July.

For clarity's sake, it might be mentioned that the original Memorial has been enlarged to include the School of Public Health, the Medical Library, and the Cancer Research Institute, funds for all of which are being provided from other sources. This unification in one building will effect eventual economy in operation.

It would be unfortunate if the original scope of the Memorial would have to be curtailed because of lack of funds. The committee in charge is making every effort to raise the last $250,000 needed and is asking non-contributors for assistance in addition to requesting increases from those who have already contributed, wherever possible.

Checks should be made payable to the Mayo Memorial Fund and should be sent to 63 South Robert Street, Saint Paul 1, Minnesota.

BOND-A-MONTH PLAN

THE Treasury Department has devised an easy savings plan which in its simplicity should appeal to the physician. All he does is to sign a card at his bank authorizing the bank to purchase each month a Savings Bond for $37.50, $75, $150 or $300 and deduct the corresponding amount from his bank balance. He receives the bond each month and all he has to do after signing the card is to place the bond in his safety deposit box. It is rather surprising how much can be saved in ten years by this method. A $37.50 bond purchased each month will amount to $4,998 in ten years; a $300 bond a month, $39,984 in the same period.

The U. S. Department of Commerce has conducted studies of physicians' incomes and has shown that, on the average, the age period from thirty-five to fifty-four is the money-making period in the physician's career. The peak is reached in the early fifties and begins to decline at the age of fifty-four. Few physicians have the time to study investments, and even professional advice on the subject is notoriously unreliable. This bond-a-month plan furnishes a 30 per cent increase in the savings over the ten-year period in as guilt-edge securities as are obtainable. Physicians are not covered by social security nor other retirement plans and so are forced to provide for their own needs in their declining years. The bond-a-month plan recommends itself.

POLIOMYELITIS VIRUS IN SECRETIONS OF NOSE AND THROAT

Poliomyelitis virus has been demonstrated in material expelled from the mouth (or nose) of two patients out of nineteen studied. This was achieved by having patients blow or spit into cloth masks from which virus was extracted. Virus was also detected in nasal swabs of the first patient and pharyngeal swabs of the second patient shown to have eliminated virus from the nose or mouth. Certain implications of these findings have been discussed. It is to be emphasized that their epidemiological significance or insignificance is yet to be determined.

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(Continued from Page 744)

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DOCTOR CHESLEY HONORED

The following citation was awarded Dr. A. J. Chesley, secretary and executive officer of the Minnesota State Board of Health since 1921, on the occasion of the presentation to him of an Honorary Life Membership by the American Social Hygiene Association. The citation gives a résumé of his busy career.

Dr. Chesley has been largely instrumental in making the Minnesota State Board of Health one of the most efficient organizations of its type in the country. His co-operation at all times with the medical profession of the state has been outstanding.

Albert J. Chesley, M.D.

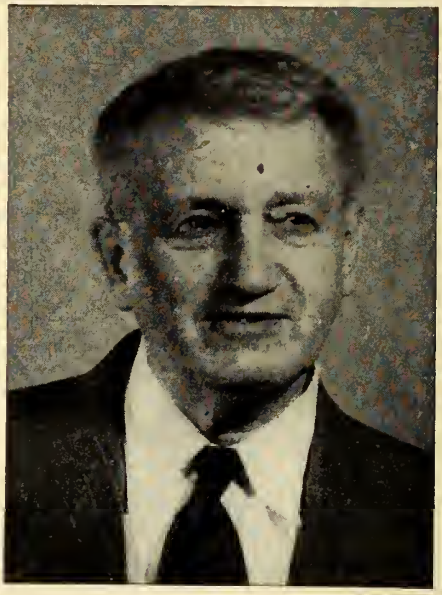
One way of measuring a man's worth is to consider what the history of his times and the setting of his life might have become without his influence. This method, like any other ordinary yardstick which one might try to apply to the subject of these remarks, will not do in his case. It is clearly impossible for those who have known and worked with Dr. Chesley through the years to visualize the scene without him. It would be even more preposterous to attempt any speculation as to what might have happened differently had he not been there. There is no room for hypothesis. He was always there. Usually ahead of the rest of us.

For example, take his connections with the State of Minnesota. He was born in Minnesota (September 12, 1877, say the excellent vital statistic records of that state) ; he was educated in Minnesota (Doctor of Medicine, University of Minnesota, 1907) ; he got his first job in Minnesota with the State Board of Health (assistant bacteriologist was the first full-time assignment, but he had worked in the state laboratory all the way through medical school, from 1902) ; he has worked for the same boss ever since, having been secretary and executive officer of the State Board since 1921. For twenty years, from 1925 to 1945, he was professor of public health in the State University's Department of Preventive Medicine. He married a Minnesota girl (another M.D., Placida Gardner, in 1920), and their daughter Louise is Minnesota-born and trained.

Nobody could very well think of health in Minnesota's last forty years without Chesley there.

Or consider his part in the affairs of the Conference of State and Provincial Health Authorities of North America. For more than a third of the history of this sixty-three-year-old organization, founded in 1884 to serve as a clearing-house and policy-planning agent for official public health activities in the United States and Canada, Dr. Chesley has been the king-pin. He became Conference president in 1924, served until 1927, and for the next twenty years was secretary-treasurer, 1946 being the first year he has succeeded in getting his annual resignation accepted. It would be hard to picture Conference matters during this quarter-century, which compassed the problems of World War I's postwar period, a major economic depression, and a second World War—without Chesley's hand among those on the helm.

Chesley knew war from first-hand experience. He was twenty-one when he enlisted in the Thirteenth Minnesota Volunteer Infantry, which saw service during 1898-99 in the Spanish-American War and the Philippine Insurrection. In 1918-19 he went to France as public health expert for the American Red Cross, and in 1919-20 he served in Poland as chief of staff for the ARC Commission. In 1940, when Minnesota's vast park areas were selected as the scene of the first National Guard maneuvers in the defense program, Chesley was there again, planning months ahead of the mobilization date for the welfare and health protection of the Guardsmen during their stay in the State of Lakes. Calling on the American Social Hygiene Association for advice, he set up a plan which involved patrols by the State Police, careful inspection by state authorities of applications for cottage and trailer-camp permits in the camp regions, and other safeguards against the invasion of camp-followers and the venereal disease infections they are prone to spread. The results of this preparation were summarized in a letter from the Corps Surgeon in Charge of Medical Services during the maneuvers, which said, in part: "There was no undue prevalence of any type of communicable disease; and further, since the completion of the maneuvers, with the return of regular Army troops to home stations and the demobilization of the National Guard troops back to civilian status, there has been no report to this office of venereal infection . . ."



Albert J. Chesley, M.D.

The Chesley program of planning ahead, seeing the job through, and measuring results is well-shown by Minnesota's social hygiene work developed under his direction. Trained in bacteriology, and epidemiology, and having served in both those departments of the State Board of Health, he early saw the dangers and the opportunities in venereal disease control and prevention.

In 1914 he was appointed director of the Board's newly created Bureau of Preventable Diseases, and in 1917, when the State of California appropriated funds to set up a war emergency social hygiene program and borrowed Dr. Harry G. Irvine of Minnesota to direct it, Dr. Chesley gave every assistance to the development of the project. In 1917 he secured a Commission in his own state and arranged for the return of Dr. Irvine as Minnesota's State Director of Venereal Disease Control. Dr. Irvine is still there, and in a characteristic disclaimer of personal credit, Dr. Chesley says of the Minnesota program: "Irvine has been responsible for it through World Wars I and II, and in the years between, with emphasis right along on the positive aspects of social hygiene, education, through courses in high schools and colleges in anatomy, ethics and sociology. A series of teaching units for use in high schools will be published in 1947."

Minnesota was one of the states showing the smallest proportion of venereal disease infections—less than seven per thousand men—among Selective Service candidates in World War II, and as in other states having long-range social hygiene educational programs, it is believed that this preventive campaign had much to do with this fine health record.

After assigning due credit to his efficient staff in other fields as well as in social hygiene, there seems to be plenty left over for the chief, according to competent judges. The pioneer American Child Health Association held him a member of its Board of Directors. The American Public Health Association, of which he is a fellow, elected him president in 1930. He has served on the Board of Scientific Directors of the Rockefeller Foundation's International Health Division. He is an Honorary Fellow of Britain's Royal Sanitary Institute. The American Medical Association (he is a Fellow) values him as a member of its Joint Committee with the National Education Association on Health Problems in Education. He is a member of various professional organizations, including the Hennepin County Medical Society, the Minnesota State Medical Association, the Association of Military Surgeons of the United States and the American Epidemiological Society, and of groups such as the National Society for Prevention of Blindness, the Veterans of Foreign Wars, the Order of Masons, Nu Sigma Nu Fraternity, and the American Social Hygiene Association. For the latter organization he has served as a member of the Board of Directors, a vice president, and on various special and standing committees, being at present a member of the committee on nominations.

These contributions as they stand could well serve as a basis for Dr. Chesley's election by the Association's 1947 Committee on Awards as an Honorary Life Member, and the Committee takes pleasure in setting down the facts. But quite aside from noting social hygiene co-operation and achievement, we desire to record here, on behalf of the many who share his friendship, a warm affection for and a deep appreciation of a stout-hearted fellow-worker in whom idealism, humor, common-sense and wisdom are equally measured and well mixed for the benefit of all with whom he has to do.

METOPON HYDROCHLORIDE

(Methyldihydromorphinone Hydrochloride)

In 1929 with the funds provided by the Rockefeller Foundation, the National Research Council, through its Committee on Drug Addiction, undertook a co-ordinated program to study drug addiction and search for a non-addicting analgesic comparable to morphine. The principal participating organizations were the Universities of Virginia and Michigan, the United States Public Health Service, the Treasury Department's Bureau of Narcotics, and the Health Department of the State of Massachusetts, which brought together chemical, pharmacological and clinical facilities for the purposes of the study. Metopon is one of the many compounds made and studied in this co-ordinated effort.

Chemically Metopon is a morphine derivative; pharmacologically it is qualitatively like morphine even to the properties of tolerance and addiction liability. Chemically Metopon differs from morphine in three particulars: one double bond of the phenathrene nucleus has been reduced by hydrogenation; the alcoholic hydroxyl has been replaced by oxygen; and a new substituent, a methyl group has been attached to the phenanthrene nucleus. Studies made thus far indicate that pharmacologically Metopon differs from morphine quantitatively in all of its important actions: its analgesic effectiveness is at least double and its duration of action is about equal to that of morphine; it is nearly devoid of emetic action; tolerance to it appears to develop more slowly and to disappear more quickly, and physical dependence builds up more slowly than with morphine; therapeutic analgesic doses produce little or no respiratory depression and much less mental dullness than does morphine; and it is relatively highly effective by oral administration.

In addition to animal experiments, these differences have been established by extensive employment of the drug in two types of patients: individuals addicted to morphine, and others (terminal malignancies) needing prolonged pain relief but without previous narcotic experience. In morphine addicts, Metopon appears only partially to prevent the impending signs of physical and psychical dependence. In terminal malignancy, administered orally, it gives adequate pain relief, with very little mental dulling, without nausea or vomiting and with slow developments of tolerance and dependence.

The high analgesic effectiveness of oral doses (with the elimination of the disadvantage to the patient of hypodermic injection), the absence of nausea and vomiting even in patients who vomit with morphine or other derivatives, the absence of mental dullness and the slow development of tolerance and dependence place Metopon in a class by itself for the treatment of the chronic suffering of malignancies, and it is for that purpose exclusively that it is being manufactured and marketed.

Metopon will be available *only* in capsule form *for oral administration.* The capsules will be put up in bottles of 100 and each capsule will contain 3.0 mg. of Metopon hydrochloride. They may be obtained by physicians only from Sharp & Dohme or Parke, Davis & Co., on a regular official Narcotics Order Form, which must be accompanied by a signed statement supplying information as to the number of patients to be treated and the diagnosis on each. The drug will be distributed for *no other purpose* than oral administration for chronic pain relief in cancer cases.

The dose of Metopon hydrochloride is 6.0 to 9.0 mg. (2 or 3 capsules), to be *repeated only on recurrence of pain,* avoiding regular by-the-clock administration. As with morphine, it is most desirable to keep the dose at the lowest level compatible with adequate pain relief. Therefore, administration should be started with two capsules per dose, increasing to three only if the analgesic effect is insufficient.

Tolerance to any narcotic drug develops more rapidly with excessive dosage and under regular by-the-clock administration. Also, as a rule, the pain of cancer varies widely in intensity from time to time. Pain, therefore, should be the only guide to time of administration and dosage level. Tolerance to Metopon hydrochloride develops slowly. It can be delayed or interrupted entirely by withholding the drug occasionally for twelve hours or for as much of that period as the incidence of pain will permit.

To each physician will be sent a record card for each patient to whom Metopon hydrochloride is to be administered. He will be requested to fill out these cards and return them in the addressed return envelope. He must furnish this record of his patient and his use of Metopon hydrochloride if he wishes to repeat his order for the drug. The principal object of this detailed report is to check the satisfactoriness of Metopon hydrochloride administration in general practice. The physician's cooperation in making it as complete as possible is earnestly solicited.

The limited use of Metopon hydrochloride as described above has been recommended by the Drug Addiction Committee of the National Research Council, and the Committee, with the co-operation of the American Cancer Society, will supervise the distribution of the drug. The committee is composed of Wm. Charles White, Chairman, Washington, D. C.; H. J. Anslinger, Commissioner of Narcotics, United States Treasury Department, Washington, D. C.; Lyndon F. Small, National Institute of Health, Washington, D. C.; and Nathan B. Eddy, National Institute of Health, Washington, D. C. Queries and comments on Metopon may be directed to Dr. Eddy, who will answer them for the committee.

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MULTIPLE FOCI OF POLIOMYELITIS IN FATAL CASE

A fatal case of poliomyelitis is described which occurred in a laboratory worker. It is probable, although not definite, that this man acquired his infection as a result of exposure to poliomyelitis virus in the laboratory.

Prior to his infection he was working with human infectious material and with strains of poliomyelitis virus in their early monkey passage.

Poliomyelitis virus was isolated in this case: from the throat (during life), and at autopsy from the central nervous system, the washed wall of the duodenum, mesenteric lymph nodes and from some of the right axillary lymph nodes. Attention is called to this last fact because just prior to his illness, this patient sustained an injury to his skin on the right wrist.

Previous experiences, both published and unpublished, on the isolation of poliomyelitis virus from lymph nodes is reviewed and discussed in the light of the findings of the above case.

Histologic lesions of poliomyelitis were present in one anterior olfactory nucleus. Extensive lesions were present in the midbrain, pons, medulla and spinal cord.

"The portal of entry of the virus was not determined."

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MEDICAL ECONOMICS

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George Earl, M.D., Chairman

ADVISORY COMMITTEE FORMED TO TACKLE NURSE SHORTAGE

The great scarcity of registered nurses which presents a problem dangerous and tragic to hospitals, physicians and the public, both in urban and rural areas, is the reason behind the recent organization of a committee of eighteen members, known as the Minnesota Advisory Committee on Nursing.

Nine different organizations are represented on this committee: the Minnesota State Medical, hospital and Nurses Associations, the State Board of Examiners of Nurses, the State Board of Health, the Division of Public Institutions, the Minnesota Catholic Hospitals, the State Department of Education and the Minnesota Farm Bureau Federation.

This Committee met with the Governor in his office on May 28 and informed him about existing conditions resulting from the nurse shortage. The Governor was very much impressed with the findings of the Committee and requested that it continue its activities, suggesting that an executive committee be selected from the group. This is now being done.

Rural Hospital Representatives Meet

Hospitals, doctors, nurses and the general public have been aware of the serious shortage of nurses for a long time, but no one has made any workable suggestions as to what should be done about it. The first concrete step was taken by Dr. W. L. Burnap of Fergus Falls when he called a meeting of rural hospital representatives at that town on September 14, 1946. The response to this meeting was excellent. Twenty-five hospitals sent representatives; others wrote assuring their support.

It was decided to begin attacking the problem as it affected rural hospitals first because hospitals in rural areas depend entirely upon city schools for nurses and because 50 per cent of all patients hospitalized are in the country, that is, outside of the Twin Cities, Duluth and Rochester.

At this first meeting it was learned that state institutions, nearly all of which are outside of the large cities, suffer also from a lack of nurses. These institutions cannot turn patients away because of this lack, and yet they must provide patients with the best possible care.

At the meeting Dr. W. L. Patterson, superintendent of the Fergus Falls State Hospital said: "In one way or another the state will see that its patients are taken care of. It must be done, and if the nursing profession cannot furnish the nurses, then State Hospitals will have to start schools."

Practical Nurse Bill Passed

Although it was a compromise measure, the Bill for the Licensure of Practical Nurses, which was passed by the 1947 Legislature, is counted as an important step toward solving part of the nurse shortage problem. This law creates a board of examiners for practical nurses and as soon as the board is organized and standards and regulations have been set, it is expected that several practical nursing schools will be established.

It is felt that the present plan of licensing practical nurses will help to a certain extent, but it does not meet the great need for more graduate nurses. There is a solution to the pressing problem, in the committee's opinion—namely, the establishment of nurses' training courses in properly equipped rural hospitals with one-year affiliation in a large city hospital. This is the goal of the present advisory committee, to get as many hospitals in rural areas as are in a position to offer nurse training courses to establish them, or as the case may be, to re-open nurse schools which are now closed.

In order to extend the study of the nursing situation, a meeting was held on March 21, 1947, in Saint Paul at which representatives of all hospitals, large and small, who were interested in the problem were invited. Also present at this meeting were officials from the Nursing Association, the Hospital Association, the State Board of Examiners of Nurses, the League of Nursing Education and the Farm Bureau. The meeting was called by Dr. Burnap.

Problem Serious in Both City and Country

At this meeting it was learned that the nursing problem is just as serious in the city as in the country. The nursing board reported great difficulties in establishing nursing schools, particularly in rural hospitals, which have the facilities and teachers and which meet the minimum standards.

It was agreed by the group that in spite of difficulties it is vitally necessary to establish more schools in the country, as many well-qualified girls are found there and the training given in the small hospital makes an excellent nurse. It is the opinion of those who have been studying this problem that rural hospital courses are successful, first, because they are closer to the homes of the prospective students and, second, the courses are so arranged that the girls can earn their own way, aside from a few incidentals. Here a poor girl has an equal chance with those who have the means, the committee argues.

A special committee of physicians, hospital officials and nurses, with a representative from the Farm Bureau and one from the Department of Education, under the chairmanship of Dr. Burnap, was appointed to investigate the problems incident to setting up nursing schools in rural hospitals and also the qualifications for nurses, the question of practical nurses, student nurse recruitment and other phases of the general problem. This special committee reported to a meeting of the Committee as a whole on April 11, at which representatives from the State Legislature were present.

Up to this time the committee was unofficial. and it was agreed that there should be organized an official representative body, possessing all authority possible. With this in mind an interview with the Governor was arranged and his consent to endorse such a committee was received. The result was the present Nursing Advisory Committee.

Questionnaire Sent to Hospitals

In order that the Committee might have facts to work with, a questionnaire was drafted and sent to all hospitals in the state soliciting information as to present facilities, plans for expansion and present needs. Returns were excellent, with 75 per cent of the hospitals sending in reports within ten days, all of which was indicative of the interest in and importance of the problem.

It was evident from the returns on the survey that nursing schools in the cities are far from filled, that if they were filled there is a possibility that they might supply the nursing needs. This indicates the need for recruitment of more students of nursing.

The Committee has emphasized the fact that many well qualified girls will enter a training school near home who would not go to the city for training. Therefore, they urge the opening of rural nursing schools. However, they take note of the problems involved in setting up and staffing these schools. It is hoped that these problems can be worked out and that this state may be several steps nearer an adequate solution to the problem of the shortage of nurses as a result of the work done by the Nursing Advisory Committee.

It has been shown that this committee can be of service in continuing to clarify the nursing situation and as a liaison between the nursing board and the hospitals wishing to establish schools for practical nurses or those who offer courses leading to the degree of registered nurse. The State Medical Association has contributed financially to the study of this problem and it stands ready to support any constructive efforts which will help solve it.

HEARINGS BEING HELD ON NATIONAL HEALTH BILL

Hearings in Congress on S.545, the National Health Bill of 1947, began Wednesday, May 21, before the Committee on Labor and Public Welfare of the Senate, re-opening the verbal contest between those who believe Americans should be "helped to help themselves" and those who contend that compulsion is the only means whereby the health of this country can be maintained.

Developed along lines suggested by the American Medical Association and other allied health organizations, S.545, briefly, provides a plan and a means to permit broadest variation of health programs at local levels and meets the needs of low income groups without an expensive system of regimentation and the inevitable destruction of quality and medical service.

Senator Taft, one of the sponsors of the bill, opened the discussions briefly outlining his measure. Said Senator Taft: "Compulsory National Health insurance is nothing more than taxation to provide free medical care for all the people. . . . When you proceed to provide free care for people who are perfectly able to pay for it themselves, you socialize the field." Senator Taft pointed out that it would be better if the government just help states to provide free medical care for persons who *cannot* afford it.

Senator Taft maintained further that socialized medicine would make every physician the employe of the federal government. Freedom to choose a doctor, he said, is a major part of our system of free enterprise.

Denies Bill Provides Charity

Answering charges of Senator Murray and others that the Taft Bill is merely a "magnificent promise" and that it "pretends to assure medical care to all people," whereas it "only makes limited medical services available and these only to those willing to accept public charity," Senator Taft commented that for the state to help people pay their debts is not charity.

It was brought out at the hearings that the Taft Bill acknowledges the problem of the uneven distribution of health and medical services in many parts of our land. In contrast to the Wagner-Murray-Dingell Bill, it encourages the gradual development of local and statewide medical insurance programs. Provisions are made for the organization of newer and better forms of medical practice to meet the new conditions created by the spread of prepayment plans.

General provisions of the 1947 Health Bill include a grant of $200,000,000 a year to states on a population basis for medical care, chiefly to low-income patients (Minnesota's allotment would be $4,119,800); establishment of an independent national health agency to handle all the federal government's health activities; and grants to states for dental care, cancer control and periodical medical examinations for *all* school children.

AMA Representatives Appear in Behalf of Bill

Dr. R. L. Sensenich, Chairman of the AMA Board of Trustees, appeared early in the hearings in behalf of Taft's National Health Bill. Having observed the standards and methods of distribution of medical care in other nations, and on the basis of experience and advice of investigators trained in health activities, he declared that he feels it evident that social legislation containing compulsions cannot be enacted without infringing upon the basic quality of American freedom.

Government administration, said Dr. Sensenich, is too far removed to be applicable to local community and individual needs. Therefore, to attain a broad and effective approach to the problem, a health program must rest on voluntary effort with legislation providing assistance.

S.545 more nearly approximates the health program set forth by the AMA, Dr. Sensenich pointed out, since the provisions of this bill are well planned and provide a sensible approach to meet the needs of the whole nation.

Dr. E. J. McCormick, Chairman of the Council on Medical Service, called attention to the fact that better health for the citizens of the nation is not a single problem, nor merely a financial problem, but that it embraces several problems. The provision for assistance to states in making surveys of medical care preparatory to the formation of a plan for extending such care is therefore a very sound one, he maintained.

Hospital Representatives Testify

Referring to the Taft Bill as "plunging boldly and courageously" into the problem of co-ordinating federal health activities, the president of the Catholic Hospital Association, Reverend Alphonse M. Schwitalla, S.J., said that the reorganization planned would be conducive to greater effectiveness and economy. He gave three main reasons for his endorsement of the bill as follows: (1) The measure undertakes to provide health care to those most in need. (2) Co-operation between private and public agencies providing such health care is assured. (3) While health care is a national problem, the bill gives full consideration to local differences and individual rights.

The American Hospital Association sent both its president and executive secretary to offer their support of the measure. They added their appreciation of the features of the bill which

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Minnesota Academy of Medicine

Meeting of February 12, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, February 12, 1947. Dinner was served at 7 o'clock, and the meeting was called to order at 8:10 by the president, Dr. E. M. Hammes.

There were fifty-three members and six guests present.

Minutes of the January meeting were read and approved.

The scientific program followed. Dr. Charles F. Rea, Saint Paul, and Dr. Wallace P. Ritchie, Saint Paul, each read an inaugural thesis.

PRESENT-DAY CONCEPTS IN THE TREATMENT OF HYPERTHYROIDISM

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In this paper, four phases of the present-day treatment of hyperthyroidism will be discussed: (1) the use of thiouracil; (2) the use of radioactive iodine; (3) the use of spinal anesthesia for operation and for post-operative treatment; and (4) the handling of patients who have a persistently high basal metabolic rate in spite of apparent adequate medical and surgical treatment.

Thiouracil.—The introduction of the use of thiouracil is the greatest advance in the treatment of hyperthyroidism since that of iodine. It is well known that certain substances, like urea and the sulfonamides, cause a decrease in thyroid activity and enlargement of the gland. It was only natural that the effect of other substances such as thiouracil should have been tried. Its physiologic action is to inhibit the iodine uptake of the thyroid gland. As a result, the pituitary gland becomes sensitive to the lack of thyroxin in the circulating blood and hypertrophies to produce more thyrotropic hormone. Under the stimulation of this hormone, the thyroid gland hypertrophies, but since the iodine uptake is blocked, no excess thyroxin is formed. Accordingly, there is a decrease in body metabolism.

Thiouracil is said to be effective against all types of hyperthyroidism and acute thyroiditis. In my own experience with three cases of acute thyroiditis treated with thiouracil, the results were not too impressive. At least, it took the patients as long to recover from the disease as others not treated by this drug. The dose of the drug is 0.6 gm. daily, given in four doses. Giving thiouracil in divided doses seems to be more effective than in one single dose. The response to this medication is not seen for several weeks and if iodine has been given previously, the time response is longer.

In collected reviews, it is said that about 10 to 15 per cent of all patients treated with thiouracil have some reaction to the drug. The reactions are related more to drug sensitivity than to dosage. In the first large series, death due to the drug was said to have occurred in 0.5 per cent of cases. This figure is undoubtedly high, as experience with the drug has been gained. Leukopenia occurs in 3 to 4 per cent and agranulocytosis in 1.5 to 2.5 per cent. The death rate from agranulocytosis is 26 per cent. When agranulocytosis occurs, the drug should be stopped, and penicillin and transfusions given. Fever, lymphadenopathy and skin rashes have also been reported as complications. As prophylaxis against these reactions, the patient should have his leukocyte count checked weekly and should report to his doctor immediately if signs of sore throat, coryza, malaise, skin rash, et cetera, develop. Even after the drug has been discontinued, the patient may develop toxic reactions and accordingly should be watched for at least three to four weeks after stopping the medication.

The question arises as to whether thiouracil can be used as the sole treatment of hyperthyroidism. The consensus of opinion seems to be that the drug should be used chiefly in the preoperative preparation of moderately and severely thyrotoxic patients and that it is risky to use it as the sole therapy in such cases. Some doctors have used the drug in the treatment of mildly toxic hyperthyroid patients over a period of six to eight months with no untoward effects. Such therapy is not without its dangers, however, and should be reserved for very selected cases.

The patient receiving thiouracil before thyroidectomy should have the drug stopped two weeks before operation and be given Lugol's solution, 10 drops three times a day. Under such conditions, the thyroid gland will be firmer and less vascular at operation.

The use of iodine and thiouracil gives us some insight as to the action of iodine in the hyperplastic goiter. Giving thiouracil to the hyperplastic thyroid gland makes it even more hyperplastic. While thiouracil prevents the utilization of iodine by the thyroid, notwithstanding this block, the addition of iodine as in Lugol's solution causes resolution of the thyroid gland in Graves' disease. Therefore, it is concluded that iodine exerts two actions upon the thyroid gland in hyperplastic goiter, an iodinating action and an involuting action, and that these two actions can be separated one from the other by means of thiouracil.

Radioactive Iodine.—Induced radioactivity was discovered in 1934 and that year Fermi and his co-workers in Italy prepared radioactive isotopes of iodine. In 1938 Hertz and his associates in Boston prepared radioactive iodine by exposing ethyl-iodide to radium mixed with beryllium. The activated iodine was injected into rabbits. When the various organs of the recipient rabbit were removed, minced, and spread on a mesh on a plate

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Inaugural thesis.

and exposed to standard detection techniques, it was found that the normal thyroid gland had picked up eighty times as much iodine, prepared by the cyclotion method, as is utilized by a hyperplastic goiter in man.

Radioactive iodine is obtained at present by the deutron bombardment of tellurium. The result consists of a mixture of radioactive isotropes of iodine. The principal isotropes are I^{130} which has a half-life of 12.6 hours and I^{131} with a half-life of eight days. One mc. of 12 hour iodine per gram of thyroid tissue delivers 12.3 r/min., so with a 40 to 50 gm. thyroid a sizable dose of irradiation may be given.

The effect of the radioactive iodine is checked by (1) the urinary secretion; (2) measurement by external gamma ray counter (Geiger counter); (3) the basal metabolic rate; (4) involution of the thyroid gland; and (5) clinical improvement of the patient.

Radioactive iodine is given by mouth, and tastes like stale, distilled water. The dosage given is 0.5 to 1.0 mc. of 12 hour iodine per gram of thyroid tissue. The total doses average 40 to 50 mc. although as high as 79 mc. in a single dose has been given.

The advantages of administration and selective absorption of internal irradiation therapy as compared to external irradiation are apparent. Internal irradiation is not without its toxic reactions, however. Acute roentgen ray sickness may occur; hypometabolism, even to the degree of myxedema have been reported. The question of anemia and malignancy in such cases had not been answered although in the cases observed to date (and some for a period of almost ten years), the last two possible complications have not been observed.

In 1923 Means and his co-workers reported that in the treatment of hyperthyroidism by roentgen therapy, about one-third of the patients were cured, another third improved, and another third not affected. Radioactive iodine in selected series to date has been effective as a cure for hyperplastic goiter in 80 per cent of cases.

It should be stated that sufficient experiments have not been done to establish the limits of safety of the use of radioactive iodine in the treatment of thyroid disorders. At least, however, an advance in the treatment of thyroid disease has been made by this agent.

Spinal Anesthesia.—The importance of proper preparation before operation of patients with hyperthyroidism is well recognized. The patient is treated by high caloric (high protein-high carbohydrate) diet, physical and mental rest, Lugol's solution, sedation, et cetera. When the basal metabolic rate and pulse have been lowered to normal levels, the patient is considered ready for operation. More important than the decrease in the basal metabolic rate is the weight gain by the patient. It is much more important to have a patient gain weight even though the basal metabolic rate remains stationary, than to have the basal metabolic rate lowered but the patient lose weight.

The whole rationale of thyroidectomy in hyperthyroidism is to change the patient from a hyper to a hypo state of metabolism, hoping to hit a normal level. A bilateral subtotal lobectomy in one stage is the ideal procedure. About four-fifths of each lobe should be removed. Sometimes the patient is so very toxic that a stage procedure must be carried out.

In very severely hyperthyroid patients, it has been found that a one-stage bilateral lobectomy of the thyroid can be performed if a spinal anesthesia is given with the idea of inhibiting the nerve impulses to the adrenals. An anesthetic level to the fourth dorsal vertebra must be obtained if the splanchnic nerves to the adrenal are to be inhibited.

The procedure is as follows: the patient is "sneaked" under sodium pentothal anesthesia to the operating room, and 100 to 150 mg. of novocaine crystals are given intraspinally between the third and fourth lumbar vertebrae. The anesthesia level is checked by noting at what level the patient winces when pricked by a pin. Local or inhalation anesthesia is used for the neck incision. Twenty-five patients with very toxic goiters have been treated in this manner to date, and the results have been very gratifying. Especially impressive has been the smooth operative and postoperative course. Bilateral subtotal lobectomies have been performed in one stage on these patients, whereas otherwise only stage procedures would have been attempted. Also, five patients in "thyroid storm" have been treated to date by spinal anesthesia. Fortunately all the patients have responded to this therapy and there have been no deaths.

The rationale of this procedure is based on the principle that the adrenals play an important part in thyroid metabolism. Adrenalin has been used to flare up latent hyperthyroidism (Goetch test). Also, increase in adrenalin or sympathetic-like symptoms has been stated to occur in hyperthyroidism. Unfortunately the test used (Whitehorn test) to determine the amount of adrenalin in the blood is not too specific. Further study is necessary to determine how rational the premise is that adrenalin is a factor in thyroid storm. Clinically, however, spinal anesthesia in the operative and postoperative treatment of severe hyperthyroidism has proven to be a helpful procedure.

Management of patients with persistently high basal metabolic rates in spite of apparently adequate medical and surgical treatment.—Some patients with thyrotoxic goiters, in spite of excellent medical and seemingly adequate surgical treatment still have a persistently high basal metabolic rate. If the patient with hyperthyroidism has had a bilateral, subtotal lobectomy and has a high basal metabolic rate after operation, it is usually thought that there has been a recurrence or persistence of goiter to cause the difficulty. However, if the patient has had two or three operations on the neck, has had repeated series of medical management and even a course of deep x-ray therapy, the problem of how to treat such a patient with a high basal metabolic rate is quite difficult.

Fortunately, the above symptom complex does not occur very often. During the past eight years, however, six such patients have been seen by the author. They have had the following items in common: Each had had at least two explorations of the neck for thyroid tissue after the first thyroidectomy; in none was the basal metabolic rate lower than plus 30 per cent. Four had received a series of radiation therapy. All had a tachycardia. Two patients have had repeated electrocardiograms over a period of four years and nothing besides the tachycardia has been found. One patient was treated with thiouracil, and while the basal metabolic rate was lowered from plus 35 to plus 7 per cent, the patient felt no better, and so the drug was discontinued after a four months' trial.

The author has felt in the management of these cases that as long as the patients feel well and the pulse does not go over 100 per minute, nothing should be done. It will be interesting to note any cardiac damage that may result from a persistent tachycardia. Also, it would be interesting to note what effect radioactive iodine would have on these patients. It is possible that they may have aberrant hyperactive thyroid tissue somewhere else in the neck or thorax, but none of them wishes further operation. One of the patients has worked regularly in a department store over a period of six years. Needless to say, these patients are being carefully followed, and it is hoped that informative data will be accumulated over the years.

Summary

Some present-day concepts in the management of hyperthyroidism have been reviewed.

1. The use of thiouracil in the treatment of the thyrotoxic patient has been the greatest advance in therapy since the advent of iodine.
2. The use of radioactive iodine may prove to be the therapy of choice in certain forms of hyperthyroidism.
3. In twenty-five severely toxic patients, the use of spinal anesthesia as part of the operative treatment made possible a single stage bilateral subtotal lobectomy when otherwise only a several-stage operation would have been ventured. Spinal anesthesia had been used on five occasions in the treatment of "thyroid storm" with beneficial results.
4. Of six patients, followed over several years, with persistently high basal metabolic rates after seemingly adequate medical and surgical treatment, the author has adopted a policy of watchful waiting. As long as the patient feels well and does not have too high a tachycardia, no treatment of such patients is indicated.

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Discussion

Dr. Martin Nordland, Minneapolis: I enjoyed listening to Dr. Rea in the presentation of this subject. He has made it very clear that hyperthyroidism is a disturbance strictly calling for special treatment. The term "goiter," like the word "rheumatism" covers too much territory. It would be fortunate if a more clear-cut distinction would be made in the minds of the profession between the functional disturbance of the thyroid, such as true hyperthyroidism, and the other disturbances of the gland such as the nodular and inflammatory changes. It is only in true hyperthyroidism that the new drugs will help. Thyroidectomy has been very successful in the treatment of all types of "goiters" with the exception of true hyperthyroidism. In true hyperthyroidism, statistics reveal that in about 27 per cent of those treated by operation, the results have not been satisfactory. Several years ago, Dr. William O'Brien, of the University of Minnesota, discussed the "Future of Medicine" before the Hennepin County Medical Society. In this discussion, he pointed out that anatomy, pathology, and even surgical technique, was relatively standard. He prophesied that new developments and progress would come through chemistry, biochemistry and allied fields.

We all know what penicillin and sulfa drugs have done for surgery. In time, no doubt, a drug such as thiouracil may eliminate surgery entirely in this disturbance of the thyroid. At this time, however, thiouracil is not the drug. Early reports seem to have been too optimistic in their evaluation of the thio drugs, and to have overlooked the toxicity likely to occur from large initial doses. Thiouracil may be a potent weapon for the control of thyrotoxicosis in many cases when used wisely, with full understanding of its possibilities and dangers. Long continuous observation is necessary. Serious complications have been observed long after discontinuance of the drug. I only wish to emphasize the fact that it is a dangerous drug, and that its use at the present time should be limited to the extremely toxic case in a large clinic or teaching institution where the patient can be observed very closely so that the severe complications, such as leukopenia and agranulocytosis do not develop. Even the most enthusiastic do not claim that this drug brings about a cure.

I cannot refrain at this time from discussing one of the important points in the diagnosis of hyperthyroidism. Too much emphasis has been placed upon the basal metabolic rate. The basal metabolic rate should never be taken as a criterion for surgery, or for the use of thiouracil. It is a recognized fact that the persistently rapid pulse comes first in importance. The rapid pulse with weight loss, together with the other cardinal symptoms of hyperthyroidism are much more important than the basal metabolic rate. This observation (basal metabolic rate) is only confirmatory.

I have had no experience with radioactive iodine and therefore cannot discuss this phase of treatment. This may be something well worth while in the near future.

Those of us who have seen a severe postoperative crisis in hyperthyroidism will welcome any additional method for the management of this problem. Spinal anesthesia, as Dr. Rea described it, may develop into an excellent weapon for the treatment of these patients. Fortunately, the severely toxic patients are seen less often than previously; and, in most of our toxic cases, the postoperative crisis can be avoided by proper preoperative preparation.

I want to congratulate Dr. Rea for his excellent presentation. I am very happy to have had the privilege of listening to him and to have had the opportunity of discussing his paper.

Dr. J. A. Lepak, Saint Paul: Dr. Rea ought to be congratulated for bringing to our attention such a timely subject as the recent advances in the treatment of hyperthyroidism. Anyone who wants to use thiouracil ought to be not only a good clinician but also employ a good laboratory. Some time ago I listened to a discussion of the action of thiouracil by a member of the Mayo Clinic. The more the drug was used, the more cautious was everyone in prescribing it. Where Lugol's solution sufficed to prepare the patient for operation, thiouracil was never employed. Certainly the mortality rate from thiouracil is all out of proportion to its benefits when compared with the harmlessness of Lugol's solution.

The clinical manifestations of hyperthyroidism do not run parallel with basal metabolic readings. Sometimes the clinical manifestations of hyperthyroidism are all out of proportion to the basal metabolic readings. We have to wait, therefore, for a considerable time for the proper evaluation of the benefits of thiouracil in the treatment of hyperthyroidism.

Personally, on account of the relatively high mortality rate of thiouracil at the present time in the treatment of hyperthyroidism, I favor the administration of Lugol's solution and the operative procedure. Dr. Rea has brought out a very controversial subject and I hesitate to accept it without further studies, controls and observations.

Dr. C. N. Hensel, Saint Paul: I do not like to let such a splendid presentation pass with nothing but "cold water" thrown on it by a surgeon and by an internist.

I have had experience with the use of thiouracil in the treatment of thyrotoxicosis in but one case; but, in that case, the results were so satisfactory and lacking in hazard that I am planning to use it again.

The case is that of a nineteen-year-old unmarried woman who had been nervous since puberty and whose symptoms of hyperthyroidism dated back about two years but were not recognized as such until February, 1945, when her metabolic rate was plus 48 per cent.

In May of 1945 she was examined at the Mayo Clinic where her metabolic rate was reported as plus 51 per cent. She was kept in bed, in the hospital at the Mayo Clinic, on sedatives and Lugol's and the standard preoperative management for a period of six weeks. She was then sent home as unsuitable for surgery.

On September 10, 1945, she entered the Miller Hospital as a patient of Dr. Jones to be prepared for thyroidectomy. She was put to bed on sedatives and Lugol's, 15 drops t.i.d. (the use of iodine had been haphazard in the previous weeks), and on a full diet.

Her metabolic rate was plus 54 per cent, heart rate 120 beats per minute, and blood pressure 180/100. After a week on such a regime, there was absolutely no improvement in her condition.

At this juncture, I was called in and found a patient with a severe thyrotoxicosis, exophthalmos, cardiac palpitation, bodily restlessness, tremor, quadriceps weakness, emotional instability, and insomnia. The thyroid gland was diffusely enlarged, smooth in outline, and firm in consistency. The heart was enlarged and slamming in action and there was a systolic murmur over the apex.

The standard treatment was obviously not effective in this case, so we decided to try thiouracil which was then on the reserve list and could only be obtained from the manufacturer.

We read the available literature on this new drug, familiarized ourselves with its dangers and precautions, and on September 22, 1945, commenced treatment with thiouracil 0.2 gram t.i.d., with 10 grains of soda bicarbonate added to each dose, and ordered leukocyte counts and differential smears made every day.

Within the first week there was an initial drop in leukocytes from 10,000 to 5,000 and then the count rose to 8,000 and remained in that vicinity. The polymorphonuclear cells ranged from 58 to 68 per cent.

By October 30, 1945, thirty-eight days after starting thiouracil, the patient was showing lessening of the thyroid drive, the metabolic rate was plus 33 per cent and the pulse rate was 80 beats per minute.

On November 1, 1945, the patient had an acute psychotic episode, left the hospital (unobserved) for two hours and on her return was in a state of shock and near collapse. Psychiatric consultation was obtained and treatment instituted on the basis of a schizophrenia. The patient was placed in bed, in restraints, put on sedatives and tube feeding. But the thiouracil was continued three times a day in a dose of 0.2 gram.

On November 21, 1945, the metabolic rate was plus 12 per cent and the pulse rate was 52 beats per minute. Because of the complicating psychosis and suggestions in the literature that long administration of thiouracil might effect a permanent cure of hyperthyroidism, we continued to give thiouracil 0.2 gram three times a day.

On November 27, 1945, shock treatments were started with insulin therapy.

On December 14, 1945, the metabolic rate was plus 7 per cent, pulse rate 62 beats per minute, and leukocyte count 12,400. Thiouracil was continued at 0.2 gram twice daily.

On December 20, 1945, the dose of insulin, which had reached 160 units a day, was stopped because of the presence of severe anginal pains and general debility. Papaverine hydrochloride, grains 1½, were used four times a day for the anginal pains. Believing that thiouracil might also be having some deleterious effect on the heart, the dose was reduced to 0.2 gram once daily and continued at that level. With the cessation of the insulin therapy, the patient soon revived, and it was evident that she would always be a schizophrenic at a childish level with a fanciful outlook on life. The hyperthyroidism was controlled and we hope to keep it so, for surely this individual was a most unsatisfactory candidate for goiter surgery.

She was discharged from the hospital on January 1, 1946, with instructions to continue thiouracil 0.2 gram once daily. At that time her hemoglobin was 90 per cent, leukocytes 7,600, polymorphonuclear cells 61 per cent and red blood cells normal. Fasting blood sugar was 105 mg., cholesterol 362 mg., blood pressure 114/60, and pulse rate 80 beats per minute.

By the persistent use of thiouracil for 100 days, we had carried this patient through a violent psychotic episode and brought a "flaming" thyrotoxicosis under control without hazard, when nothing else could have accomplished these results.

On February 2, 1946, thiouracil was stopped for one week because of joint pains and chilly sensation and then resumed in a dosage of 0.1 gram daily.

On April 3, 1946, the patient was examined at the office. Her eyes were no longer prominent. There was no vasomotor blotching of the skin; body nutrition was improved, and heart action was irritable, but quieted on held breath. The metabolic rate was plus 3 per cent, pulse 88, temperature 97.8°, and blood pressure 130/80. Cholesterol was 347 mg. and sedimentation rate 8 mm. in one hour. Hemoglobin was 89 per cent, red blood cells 4,620,000, and white blood cells 6,400. She was continued on thiouracil, 0.1 gram a day.

In June, 1946, she was seen by Dr. Jones after a bruising auto accident. He found clinical evidence of reactivation of the hyperthyroidism.

The dose of thiouracil was increased to 0.1 gram three times a day, without any amelioration in symptoms. It was now obvious that our only recourse was surgical removal of the thyroid gland and that promptly. So, on June 27, 1946, thiouracil was stopped, and Lugol's solution 15 drops three times a day was started and sedatives prescribed.

On July 10, 1946, the patient re-entered the Miller Hospital and on July 11 Dr. Jones performed a bilateral partial thyroidectomy with no undue bleeding or complications.

The microscopic diagnosis of removed tissue was "hyperplastic goiter, lugolized." The patient was out of bed on the third postoperative day, walked on the fifth day and went home on the ninth day.

A month later her metabolic rate was minus 11 per cent, pulse 66 to 70, temperature 98.6°, leukocytes, 8,300, and cholesterol 278 mg.

Dr. M. B. Visscher, University of Minnesota: I want to congratulate Dr. Rea on his studies with the use of spinal anesthesia in the attempt to eliminate some of the hazards in thyrotoxicosis. There is a very good physiological rationale for the type of procedure he is using. I think he would be the first to admit that only the future will tell what practical significance this innovation may have in the treatment. I feel sure he will add something to our knowledge about the thyroid gland and I want to urge him to carry on these studies on the thyroid gland. I think he is doing a very good job.

Dr. Rea, in closing: I wish to thank those who discussed this paper. I believe that thiouracil should be used only in the more severely toxic cases of goiter. The slightly toxic cases can be prepared adequately by iodine therapy without thiouracil.

I am glad the question of evaluating the basal metabolic rate was brought out in the discussion. It should be remembered that the basal metabolic rate is a laboratory test and is subject to error. Personally, I put more emphasis on whether or not the patient is gaining weight, rather than the lowering of the basal metabolic rate in determining the progress of the thyrotoxic patient under therapy. A thyrotoxic patient with a basal metabolic rate of plus 50 per cent that goes down to a plus 20 per cent, but who is losing weight, is a poorer risk than a similar patient whose basal metabolic rate remains stationary but who is gaining weight.

EXPERIENCES IN THE TREATMENT OF HYDROCEPHALUS IN INFANTS

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The birth of a hydrocephalic infant has usually been faced with despair by the obstetrician, pediatrician and the family from the earliest ages. Only in the last ten years has there been an honest hope that the child will be one of the few which will either recover spontaneously or be a candidate for surgical amelioration of his condition.

This discussion is limited to hydrocephalus occurring in early infancy. It is a discussion of internal hydrocephalus in which the fluid is within the ventricular system. External hydrocephalus, caused by an excess of fluid in the subarachnoid space, or by subdural hematoma or hygroma, is a rare occurrence and is only mentioned in passing. Hydrocephalus occurring after infancy is due, in 95 per cent of cases[4], to tumors or cysts and will not be included.

There are no thorough studies of any large group of hydrocephalics as regards etiology and prognosis. The incidence is suggested by several authors. Dott and Levin[11] found sixty cases of hydrocephalus not caused by tumor in 700 cases of verified tumor. Wilder and Moldavalsy[27] record eight cases in 6,000 deliveries, while Putnam[19] states that according to Murphy there were found eighty-eight cases of hydrocephalus alone or associated with spina bifida in approximately 130,000 births. Putnam considers, however, that there are probably twice as many, as reported, as a large number do not develop until weeks or months after birth. Haynes[16] states that in 183,044 admissions to the Children's Hospital, there were 334 cases of hydrocephalus. These figures are certainly not satisfying. It is very important to know the percentage chance that any infant with hydrocephalus has of spontaneous recovery or of recovery by conservative means before subjecting it to a procedure with a rather high mortality. This would necessitate a careful evaluation of a large number of cases and such a study apparently has not been made. In all probability there are numerous mild cases which go unrecognized, but when a child has sufficient hydrocephalus to cause recognition and any concern, the chances of its spontaneous correction are apparently not small, according to Bucy[3] and Penfield,[18] although Putnam[19] states he has never seen a spontaneous recovery. It is our impression that if an infant has such a degree of hydrocephalus that the family or pediatrician is concerned, the chances are very great against recovery without treatment.

The cerebrospinal fluid and the subarachnoid spaces were first described by Cottugno[12] in 1784. According to Fraser and Dott[14] the cerebrospinal fluid is probably not produced before the fifth month of intra-uterine life as it is only after this time that the foramina of Luschka and Magendie appear as perforations in the tela choroidea. Their reasoning is by implication for if the fluid was secreted before this time it could not be absorbed and hydrocephalus would always result due to the as yet unpatent foramina. It is possible, however, that cerebrospinal fluid may have other avenues of exit in intra-uterine life. Browning[2] states that in fetal life there are spinal afferent vessels, possibly similar to lymphatics, which lead out through the spinal nerves as shown by Key and Retzius. This is the exit for cerebrospinal fluid in most animals and possibly is an avenue of exit in fetal and early infant life. If Fraser and Dott are correct, however, a congenital hydrocephalus would begin at the earliest after the fifth month of intra-uterine life.

The origin of the cerebrospinal fluid in the choroid plexus, its circulation through the aqueduct of Sylvus to the fourth ventricle and to the basal cisternae by way of the foramina of Luschka and Magendie, and thence to the arachnoid villi where it is absorbed, is quite well established. Hassin[15] is one of the few who question the fact that the cerebrospinal fluid is a product of the choroid plexus. He cites numerous cases of marked hydrocephalus with an atrophic, sclerosed choroid plexus which is imbedded in the brain and which could not secrete fluid. There may be some secretion of cerebrospinal fluid, however, in the perivascular spaces. Penfield[18] states that there is probably some absorption of cerebrospinal fluid by the ventricles themselves. Foley[13-1,13-2] has demonstrated a reversibility of flow through the choroid plexus. The spontaneous arrest of hydrocephalus may possibly be explained by some such process.

The surgical treatment of infantile hydrocephalus, however, is based on the well-established evidence of the production of the cerebrospinal fluid by the choroid plexus and its absorption over the surface of the brain.

Inaugural thesis.

There are two types of infantile internal hydrocephalus, obstructive and non-obstructive or communicating. In the first instance there is an obstructive mechanism so that fluid is unable to reach the spinal subarachnoid space due to an obstruction somewhere from the choroid plexus down to and including the foramina of Luschka and Magendie. Sachs,[23] reporting the largest series of operated cases in the literature (ninety-eight in all), states that fifty-four (60 per cent) were communicating types and forty-two (46 per cent) were obstructive in nature. Fraser and Dott[14] found that six cases out of twenty-one were communicating. In seven of their cases there was a definite history of birth trauma. The common causes of obstructive hydrocephalus are congenital artresias, ependymitis or arachnoiditis caused by toxins, infection or hemorrhage. Obstructive hydrocephalus frequently accompanies spina bifida due to the Arnold-Chiari deformity. Russell and Donald[22] describe the Arnold-Chiari deformity, first reported by Arnold in 1894 and shortly thereafter by Chiari, as primarily a deformity of the cerebellum. The fourth ventricle is elongated. The foramina of Luschka and Magendie lie below the foramen magnum and, because of the lack of space, fluid is unable to enter the basal cisternae. I shall further discuss this important syndrome under the subject of treatment.

In the communicating type of hydrocephalus, fluid is able to leave the fourth ventricle but the mechanism of absorption in the subarachnoid spaces is faulty, due to either failure of development of the subarachnoid spaces, arachnoiditis, ependymitis caused by toxins, infections or hemorrhage. Internal hydrocephalus is rarely if ever caused by hypersecretion of cerebrospinal fluid.

Toxoplasmosis,[1] a protozoan infection, which Cowen and Page[1] in 1939 showed could be transmitted to man is also a frequent cause of hydrocephalus.

Hydrocephalus may be congenital or acquired after birth.

Penfield studied twenty-seven cases and of these, seventeen were present at birth and seven developed after birth. In at least five cases he states that an inflammatory process started *in utero*. In twenty-six cases treated by Putnam,[21] fifteen were congenital. Dandy and Blackfan found in fifty-four cases of obstructive hydrocephalus, 21 per cent were congenital, while Bucy[3] found about 50 per cent of forty-five cases of communicating hydrocephalus were congenital.

Probably over half of the cases of infantile hydrocephalus are present at birth. In some instances there is such an aplasia of brain substance that either the hydrocephalus must have been present for many months or there was a congenital absence of brain tissue. In either event the prognosis is extremely poor no matter what procedure is attempted.

The pathological findings depend upon whether the hydrocephalus is communicating or obstructive. The white matter is stretched and is destroyed long before there is destruction of the gray matter. It is surprising to note the extent of damage in some individuals in whom there still remains a high degree of intelligence and function. Of course, the basal nucleii are little affected until late; therefore, a fairly normal function is possible even with a tremendous hydrocephalus. Cases have been recorded in which there has been a definite return of cortical thickness after relief from hydrocephalus. However, it is conceded by all that if the cortex is less than 1 cm. in thickness, efforts to treat the child should be abandoned, as only an imbecile will result.

Diagnosis

The determination of the presence of hydrocephalus is not always easy, particularly in the early stages. When one considers that diagnostic procedures such as spinal puncture, communication tests and air studies carry a definite risk, one must be quite certain that a hydrocephalus is developing before subjecting the infant to these procedures. If there are doubts, it will do no great harm to observe the size of the head over a period of several weeks before undertaking more active diagnostic measures.

If there is evidence that the size of the head is increasing out of proportion to the normal, the first procedure is a diagnostic ventricular tap, to rule out subdural collection of fluid. The next consideration in diagnosis is the determination of whether the hydrocephalus is communicating or obstructive. At the same time the severity of the hydrocephalus can be determined. The most satisfactory test to determine the type is the communication test. One c.c. of phenosulphopthalein is injected into a lateral ventricle and a spinal puncture done twenty to thirty minutes later. If there is an obstructive hydrocephalus there will be no dye recovered in the spinal fluid. Pressure readings of both ventricular and spinal fluid should be taken.

The width of the cortex should be noted, as a cortex of less than 1 cm. in thickness prognosticates a poor result.

Encephalography is of some value but encephalography carries some risk, and as a rule one has ample evidence of the type of hydrocephalus and the adequacy of the cortex without this procedure.

Other diagnostic procedures are secondary. One attempts to determine the cause of the obstructive or communicating hydrocephalus, whether it be toxoplasmosis, syphilis, Arnold-Chiari deformity, congenital aplasia or nonspecific infection. Tumor as a cause of early hydrocephalus is extremely rare.

Treatment

There is no doubt that there are spontaneously averted cases. There are no records of what this percentage is. It must, however, be small.

The excellent historical review by Davidoff[8] in 1939 and by Haynes[16] demonstrates the wide variety of surgical methods used in the treatment of infantile hydrocephalus.

Almost every means imaginable for draining the cerebrospinal fluid has been used. The drainage of spinal fluid outside the ventricles is as old as the hills. It was tried by Hippocrates and Celsus, and was resurrected by Von Bergman, Kocher, Lane and many others. All met with failure.

Drainage into the subcutaneous tissues, peritoneum and dural sinuses have all been attempted with poor results. Perhaps the best of these procedures is that described by Torquildsen[25] whereby he drains the lateral ventricles into the cisterna magna by means of a tube buried subcutaneously.

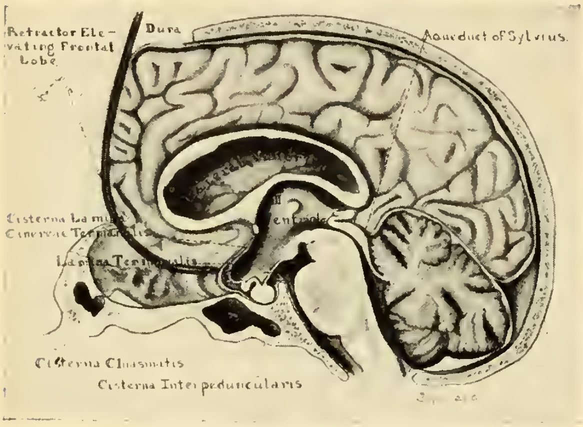
Retractor Elevating Frontal Lobe
Dura
Aqueduct of Sylvius
Cisterna Lamina Cinereae Terminalis
entricle
Lamina Terminalis
Cisterna Chiasmatis
Cisterna Interpeduncularis

Fig. 1. Drawing to demonstrate the lamina terminalis and the point of puncture. From Stookey and Scarff: Bull. Neurol. Inst. New York, 5:367, (Aug.) 1936.

The three methods which have brought the best results in the treatment of infantile hydrocephalus are (1) the so-called "puncture" operations by means of which fluid is let out of the closed ventricular space into the subarachnoid spaces where it may be absorbed; (2) the operations directed against the choroid plexus itself in which either coagulation or extirpation is performed; and (3) the operation of the decompression of the foramen magnum in cases of Arnold-Chiari deformity.

The earliest so-called puncture operations were described first by Anton and Bramman in 1908. They recommend puncture of the corpus callosum, the so-called Balkenstitch procedure. This procedure has gradually been discarded because of failure of the puncture opening to remain patent. However, as late as 1927 Jennings[17] reported nineteen cases, with five deaths and only three good results.

Dandy[5] first advocated a puncture operation which has been successful in many cases, i.e., puncture of the lamina terminalis into the anterior wall of the third ventricle (Fig. 1). The two cases presented in detail in this paper were treated in this manner. Dandy modified his procedure by a temporal approach and so that the drainage was from the third ventricle into the cisterna interpeduncularis. White[26] does not believe this is necessary and gives good evidence that the puncture in the lamina terminalis remains open.

In obstructive hydrocephalus in infants, the puncture of the lamina terminalis is a rational procedure which has given satisfactory results in our hands.

Shunting operations are satisfactory for obstructive types of hydrocephalus, but in communicating hydrocephalus where absorption is faulty and there are no obstructed passages, the most successful operations have been in attempts to decrease the output of cerebrospinal fluid. Dandy[6] made the first attack in 1918 when he extirpated the choroid plexus in four cases. This method has been replaced by cauterization of the choroid plexus, although there are some neuro-surgeons who are again attempting extirpation.

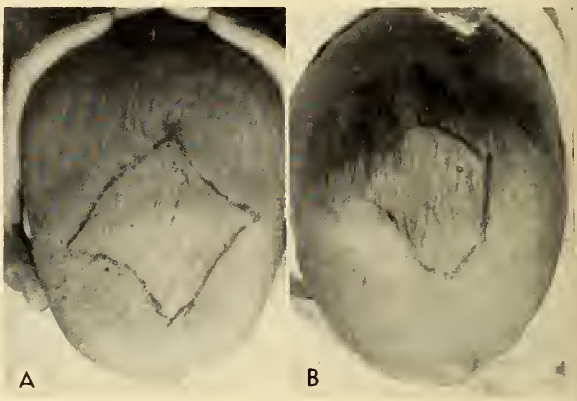

Fig. 2. (A) Size of anterior fontanelle before cauterization of the choroid plexus. (B) Size of anterior fontanelle one month following cauterization of the choroid plexus on one side.

Putnam[20] in 1935 first reported twenty-two patients in whom he had cauterized the choroid plexus by a bipolar endoscope. Only nine survived a period of four to fifteen months but five of these were well and normal, two were improved and two unimproved. In 1938 he reported a 21 per cent mortality with only two deaths in his last sixteen cases. Scarff[24] almost simultaneously reported similar results.

This method has given satisfactory results. It consists of bilateral occipital trephine with opening into the ventricles and cauterization of the choroid plexus of the lateral ventricle either by direct vision or by endoscopic methods. The two sides are cauterized at different operations. The technical aspects of the operation will not be discussed here. Suffice it to say there is ample evidence that cauterization of the choroid plexus is a very satisfactory method of decreasing the cerebrospinal fluid production (Fig. 2, a and b).

The third method of treating hydrocephalus is only applicable in those individuals who have an Arnold-Chiari deformity. D'Errico[9] first recommended unroofing the foramen magnum in such cases. He reported six cases with three satisfactory results. In 1942 he reported[10] a mortality of 12.5 per cent. In hydrocephalus associated with spina bifida, the Arnold-Chiari deformity is usually present and a cerebellar decompression is indicated. In some instances the choroid plexus may also have to be cauterized.

Results

If one recognizes that infantile hydrocephalus is present at birth in probably one-half of the cases, and the many of these are far advanced or there is a definite aplasia of the brain, the prognosis is discouraging at the outset. Nevertheless one successful result out of many cases cannot be forgotten or cast aside. The remark is heard so often: "What is the use, they will only grow up to be imbeciles?" That is true to some extent but it reflects our failure to recognize the infant who will be imbecilic if saved by operation, and should not be a reflection on the operation in the properly selected case.

Thirteen of the cases which have been studied are collected cases from the neurosurgical service at the University Hospital, and four are from the authors' series in Saint Paul.

Five of the seventeen cases were patients with hydrocephalus associated with spina bifida and with associated Arnold-Chiari deformity. One (BH) died postoperatively—a mortality of 20 per cent. One (NC) was a mental defective four years after operation, in whom operation was originally carried out at the insistence of the family, as the prognosis was admittedly poor. One (PB) living four years after is in fair condition, a cauterization of the choroid plexus having been performed following decompression. One (CY) was living and well one year after operation and was apparently normal. One (BB) was living and apparently normal five months after operation.

Thus in two of five cases the operation appeared to have produced a satisfactory result. When one realizes that this condition is secondary to another serious defect, a meningocele, a satisfactory recovery in 40 per cent is encouraging.

There were eight cases in which the etiology was undetermined. Two of these cases (TS) and (JS) were obstructive and were treated by puncture of the lamina terminalis. Both are living and normal thirteen and seven months after operation. Six were treated by cauterization of the choroid plexus. Two died postoperatively, and the remaining four are discouraging. Although the hydrocephalus was averted, not one has developed properly. This is the most discouraging group. The hydrocephalus has been averted but the child's development has been subnormal. The majority of these patients probably had their hydrocephalus *in utero* and as evidenced at operation had extremely thin cortices. The only positive statement that one can make about these cases is that hydrocephalus can be controlled by cauterization of the choroid plexus. Failure is due to lack of recognition of the chance of normal development rather than to the operation.

Two infants with congenital mal-development of the cerebellum were operated upon—one by puncture of the lamina terminalis and one by cerebellar decompression. Both died.

Only two cases of hydrocephalus caused by proven toxoplasmosis are included in this series. One (TH) has developed normally after cauterization of only one side. One (RLH) is progressing normally after six months.

In recapitulation, seventeen cases have been operated upon. Five operative deaths are recorded—a mortality of 29 per cent over all.

There are six patients who are developing properly.

Satisfactory results in 35 per cent of these cases is not a remarkable record. But if one could be able to determine the prognosis for each case and refuse operation for those with a poor prognosis, operation will cure 35 per cent of these children with hydrocephalus who would otherwise live only a few years.

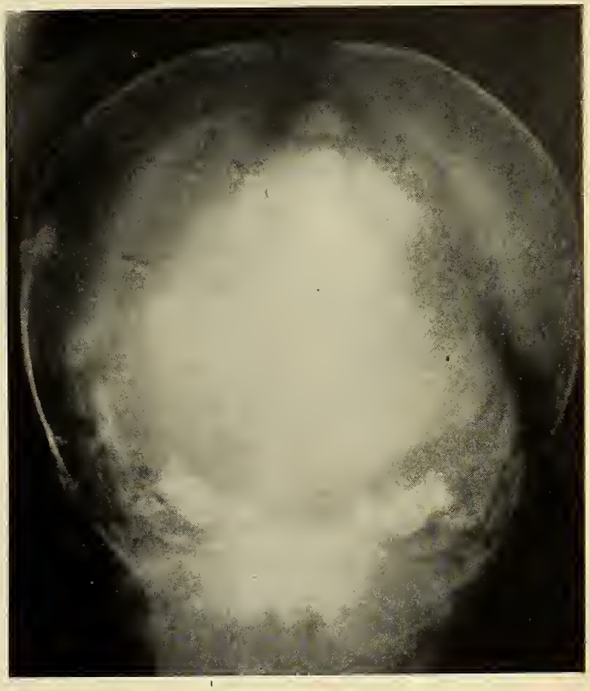

Fig. 3. (Case 1) Occipital view of the skull shows a marked separation of the sutures.

Case Reports

Case 1.—T.S. was first admitted to the Children's Hospital as a patient of Dr. Fred Ouellette on October 15, 1945. He was thirteen months old. His birth had been normal. His past history was negative except that at the age of ten months he developed chicken pox. Since that time he had been irritable and disliked any disturbance such as noise or movement. Although he had vomited before his chicken pox the vomiting had become almost continuous the week before admission. He could no longer walk.

Physical examination revealed a well-nourished child, not acutely ill but very irritable. The general examination was negative but the neurological examination (Dr. Gordon Kamman) revealed optic atrophy, right; left knee jerk increased on the right. Spinal fluid: colloidal gold negative, protein 112 mg., cell count 2, chloride 710 mg., sugar 70 mg. X-rays revealed slight enlargement of the skull with separation of the sutures (Fig. 3). He remained in the hospital six days, during which time he was very restless and irritable. He was readmitted fourteen days later. At this time he was much more irritable, did not like bright light and there was some bulging of the fontanelle. There was a right sixth cranial nerve paresis, optic atrophy on the right and a 3 diopter choked disc on the left. On November 6, 1945, communication tests revealed no dye appearing in the spinal canal after insertion into the ventricle. Because the symptoms seemed to have been definitely a sequela of chicken pox, an obstructive hydrocephalus due to encephalitis rather than to a tumor was considered to be the most likely etiology. Consequently, on the same day a puncture of the lamina terminales was performed and a free flow of fluid obtained, colored by the dye.

Postoperatively fluid collected beneath the skin flap, and frequent aspirations were necessary. Because the fluid did not seem to be absorbing, an attempt to cauterize the choroid plexus was made but the ventricles were collapsed. The brain appeared of fairly normal thickness. After about three weeks the fluid collecting beneath the scalp suddenly ceased and the patient was discharged after thirty-six days. The patient appeared to have only light perception. He remained irritable for three or four weeks, then suddenly improved and appeared to notice his surroundings.

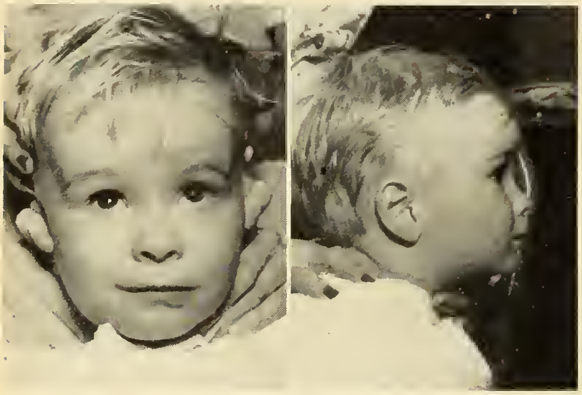

Fig. 4. (Case 1) One year after the lamina terminalis had been punctured.

Shortly thereafter he began to sit up, to walk and to develop normally. He developed poliomyelitis in July, 1946, but is recovering and according to all examinations is a normally developing child (Fig. 4).

Case 2.—J. S. was admitted to the Children's Hospital by Dr. Ray Shannon on May 25, 1946. She was five months old. She was a full-term baby and was delivered spontaneously. She appeared absolutely normal to the mother, and as a result medical care was not sought until a neighbor called the mother's attention to the fact that the baby's head was larger than normal.

On admission, the findings were essentially negative except that the anterior fontanelle measured 14 by 10 cm. and the circumference of the head was 48 cm., which was approximately 6 cm. larger than normal.

Puncture through the anterior fontanelle revealed the cortex to be approximately 1 cm. thick on the left and 2 cm. thick on the right. A communication test revealed a block, as no dye was recovered in the spinal fluid. The cell count, protein, colloidal gold curve and Kahn test were normal.

On May 31, 1946, a puncture of the lamina terminales was performed. Her postoperative course was uneventful except for a fever up to 103° for a few days.

The child now has a head 52 cm. in diameter. The fontanelles are sunken. She looks like a normal child and is beginning to stand up. Her mother thinks she is further developed than her other children were at the same age.

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Discussion

Dr. E. F. Robb, Minneapolis: All pediatricians see a number of these cases, which have been most discouraging as far as I am concerned. A few have seemed to cure themselves but most of them have gone on to a fatal termination. The results from surgery have in my experience been 100 per cent bad. Dr. Ritchie's most excellent paper tonight should give us renewed courage. He is to be congratulated on his fine work.

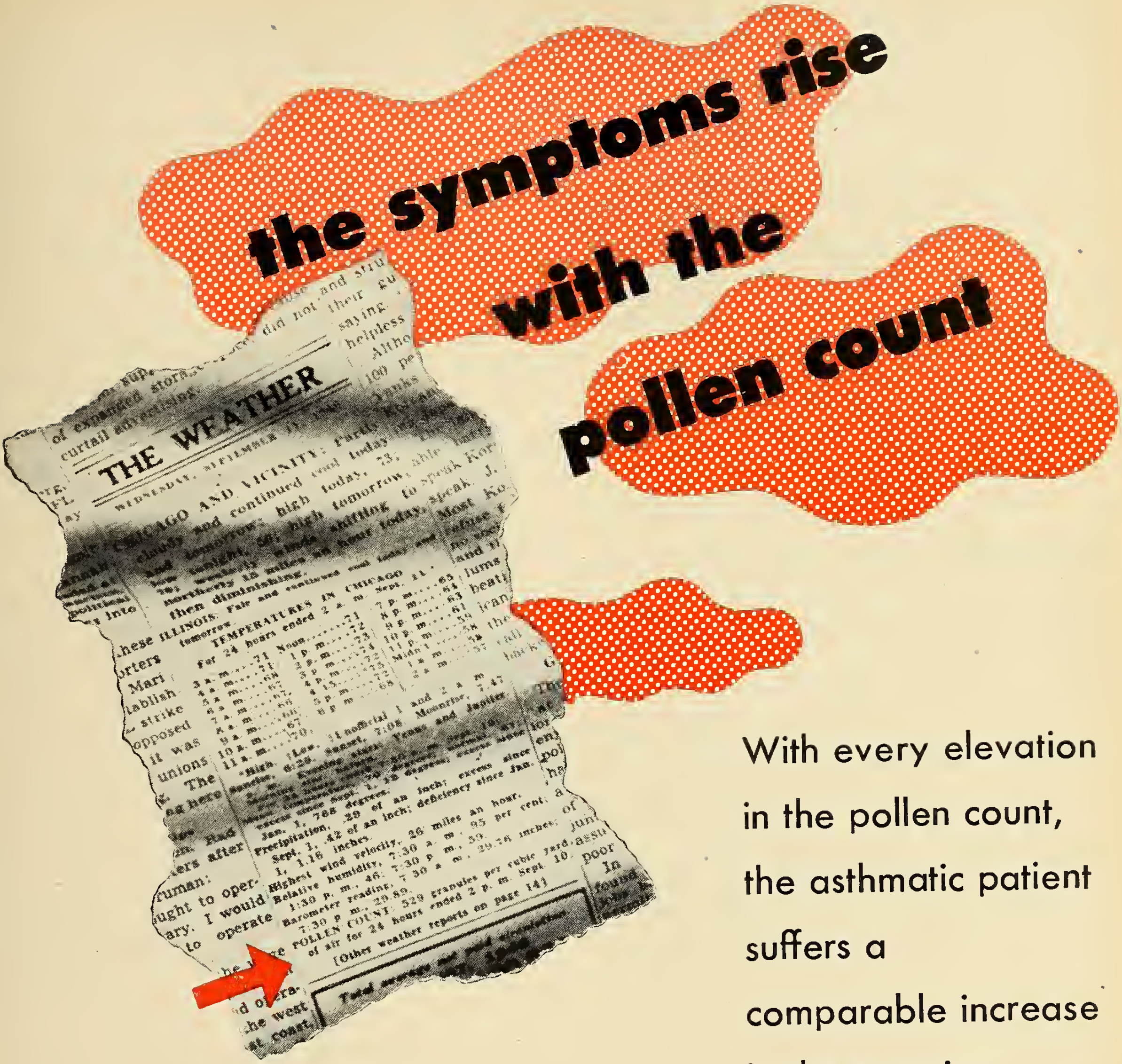
Dr. Ritchie, in closing: I appreciate the discussion. Regarding the thickness of the cortex, I may have been somewhat misleading. In estimating the thickness of the cortex, one must subtract about 1 cm. from the depth at which ventricular fluid is obtained on puncture through the fontanelle.

Inasmuch as the gray matter is not destroyed until late, there is a good opportunity for recovery of function after the hydrocephalus has been relieved.

Although the results are not by any means perfect, there are a sufficient number of recoveries to warrant a careful evaluation of all cases of hydrocephalus before determining that they are hopeless.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary*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Reports and Announcements

MEDICAL BROADCAST FOR JULY

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Service Association in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association.

1	9:00 A.M.	WCCO	Blue Cross Enters 14th Year
3	9:00 A.M.	WCCO	Minnesota Medicine
8	9.00 A.M.	WCCO	New Field in Nursing
10	9:00 A.M.	WCCO	Body Heat and Hot Weather
15	9:00 A.M.	WCCO	Why Hospital Costs Are Rising
17	9:00 A.M.	WCCO	Food Infections
22	9:00 A.M.	WCCO	Increased Demand for Nurses
24	9:00 A.M.	WCCO	Skin Care in Summertime
29	9:00 A.M.	WCCO	Costs of One Operation
31	9:00 A.M.	WCCO	Getting Ready for School

INTERNATIONAL COLLEGE OF SURGEONS

The International College of Surgeons, United States Chapter, will hold its twelfth annual Assembly and Convocation in Chicago, September 28 to October 4, 1947.

The program will include operative and non-operative clinics, demonstrations, symposia, forums, medical motion pictures, exhibits and the formal dedication of the new library and permanent home of the United States Chapter. All meetings, with the exception of the operative clinics, will be held in the Palmer House and the Stevens Hotel.

Copy of the program and detailed information may be obtained by writing Max Thorek, M.D., Co-chairman, 1516 Lake Shore Drive, Chicago, Illinois.

AMERICAN COLLEGE OF PHYSICIANS AND SURGEONS

Dr. Julian DuBois, Sauk Centre, has been elected president of the American College of Physicians and Surgeons. Other recently elected officers of the organization are Dr. C. H. Pierce, Wadena, first vice president; Dr. A. E. Ritt, Saint Paul, second vice president; Dr. Henry D. Deissner, Minneapolis, third vice president, and Dr. O. A. Lenz, Minneapolis, secretary-treasurer.

The organization will hold its first annual dinner on June 29 at the Spalding Hotel in Duluth. Speakers at the dinner include Dr. Charles A. Dawson, president of the Wisconsin Medical Society, and Dr. F. G. Benn, Minneapolis, president of the Minnesota chapter.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The twelfth annual meeting of the Mississippi Valley Medical Society will be held in Burlington, Iowa, October 1, 2 and 3, 1947. Over twenty-five clinical teachers from the leading medical schools of the country will conduct this postgraduate assembly, the entire program having been planned to appeal to general practitioners. Dr. Edward L. Bortz, president of the AMA, will be the principal speaker at the annual banquet, at which talks will also be given by the presidents of the Illinois, Iowa and Minnesota Medical Associations.

All ethical physicians are invited to attend, and for the first time in history no registration fee will be charged. A program may be obtained from Dr. Harold Swanberg, Secretary, 209 W. C. U. Building, Quincy, Illinois.

NORTHERN MINNESOTA MEDICAL ASSOCIATION

Announcement has been made that the annual meeting of the Northern Minnesota Medical Association will be held on Saturday, September 6, at Breezy Point Lodge, Pequot Lakes (near Brainerd).

The following program is scheduled for the one-day meeting.

"Abdominal Hodgkin's Disease"—Dr. W. O. B. Nelson and Dr. Leonard Dwinnell, Fergus Falls.

"Some Practical Aspects of the Rh Factor"—Dr. A. H. Wells, Duluth.

"The Diagnosis of Congenital Cardiac Defects Which Are Amenable to Surgery"—Dr. Thomas J. Dry, Rochester.

"The Management of Lesions of the Rectal Outlet"—Dr. Louis A. Buie, Rochester.

"Clinical Evaluation of New Developments in Allergy"—Dr. Albert V. Stoesser, Minneapolis.

"The Psychosomatic Component of Disease"—Dr. O. L. Norman Nelson, Minneapolis.

"Clinico-Roentgen-Pathological Conference"—Dr. E. L. Tuohy and associates, Duluth.

The meeting will close with an evening banquet, at which Governor Luther W. Youngdahl will be the principal speaker.

HENNEPIN-RAMSEY COUNTY SOCIETIES

At the first joint scientific meeting of the Hennepin and Ramsey County Medical Societies, held May 19 in the auditorium of the University of Minnesota Museum of Natural History, the principal speakers were Dr. James D. Bisgard, professor of surgery at the University of Nebraska, and Dr. Edgar S. Gordon, professor of medicine at the University of Wisconsin. Dr. Bisgard spoke on "Intra-thoracic Tumors," and Dr. Gordon discussed "Deficiency Diseases."

SOUTHWESTERN MINNESOTA SOCIETY

At a dinner meeting of the Southwestern Minnesota Medical Society, held June 3 at the Hotel Thompson in Worthington, Dr. R. W. Koucky, Minneapolis, spoke on "The Rh Factor," and Dr. John Stam, Worthington, gave a report on the cyanotic condition produced in infants by water heavily impregnated with nitrates.

At a business meeting of the society on May 20, Dr. Hermanus DeBoer of Edgerton reviewed the history of the Southwestern Minnesota Medical Society, which was founded in 1888. Dr. B. O. Mork, Jr., discussed a recent meeting of the state association of county medical officers.

UPPER MISSISSIPPI SOCIETY

Fifty-four members of the Upper Mississippi Medical Society, and their wives, were guests of the Bemidji Medical Society at a meeting held May 24 at the Cyrana Lodge on Lake Beltrami. Dr. Charles W. Vandersluis and Dr. Sidney F. Becker, both of Bemidji, were in charge of arrangements for the meeting, which was presided over by Dr. Otto F. Ringle, president of the Upper Mississippi Society.

The major part of the scientific program consisted of a discussion of low back pains by Dr. M. S. Henderson, professor of orthopedics at the Mayo Clinic, and by Dr. William Peyton, professor of surgery at the University of Minnesota.

WASHINGTON COUNTY SOCIETY

The Washington County Medical Society met for dinner on the evening of June 24, 1947, to honor one of its members, Dr. James H. Haines of Stillwater, who has completed fifty years of medical practice.

Dr. Haines was graduated from Rush Medical College, Chicago, in 1895 and was licensed to practice medicine in 1897. He went to Stillwater shortly after graduation and started his medical life as a house physician at the Stillwater Hospital, now known as Lakeview Memorial Hospital. Shortly after that he opened an office for the general practice of medicine, and he remained in active practice until January 1, 1947. Since that time he has been enjoying a much-needed rest.

Following the dinner meeting, the evening was spent in listening to tales by Dr. Haines and others of the early years of practice. A gift was presented to Dr. Haines in memory of the occasion.

MEDICAL ECONOMICS
NATIONAL HEALTH BILL

(Continued from Page 785)

provide federal assistance to states for the establishment of medical and hospital services for those whose low income makes it difficult or impossible for them to get adequate care. They further pointed out that health functions of the federal government are of sufficient importance to justify their separation into a unit headed by persons trained and experienced in health work. They especially favored the provisions of S.545 for local participation and administration, which would in every case make the community feel that it is carrying out the program according to its best judgment.

American Dental Association officials have also voiced their approval of the philosophy embodied in the Taft Bill, as opposed to that motivating such legislation as the Wagner-Murray-Dingell Bill. They point to the greater freedom to states in direction of their own programs and favor expending dental care to children whose parents cannot meet the cost of such care, but emphasize that such a program should be at the community level.

As the hearings progress, it is clear that the evidence is piling up in favor of this bill and that it shows considerable possibility of ultimate passage through Congress.

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Four-week course in General Surgery, starting August 4, September 8, October 6.
Two-week course in Surgical Anatomy & Clinical Surgery, starting July 21, August 18, September 22.
One-week course in Surgery of Colon & Rectum, starting September 15, and November 3.
Two-week course in Surgical Pathology every two weeks.
FRACTURES & TRAUMATIC SURGERY—Two-week intensive course starting October 6.
GYNECOLOGY—Two-week intensive course starting September 22, October 20.
One-week course in Vaginal Approach to Pelvic Surgery, starting September 15 and October 13.
OBSTETRICS—Two-week intensive course, starting September 8, October 6.
MEDICINE—Two-week intensive course, starting October 6.
Two-week course in gastro-enterology, starting October 20.
One-week course in Hematology, starting September 29.
One-month course in Electrocardiography & Heart Disease, starting September 15.
Two-week intensive course in Electrocardiography & Heart Disease, starting August 4.
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In Memoriam

GEORGE RALPH CHRISTIE

Dr. G. R. Christie, a practioner of Long Prairie since 1884, died January 20, 1947, at the age of eighty-nine.

Dr. Christie was born January 19, 1858, in Berlin, Wisconsin. After teaching for several years, he entered Rush Medical College from which he graduated in 1882. He began practice in Montello, Wisconsin, but moved to Long Prairie in 1884.

On September 1, 1887, he was married in Milwaukee to Susan West. Four children were born to them, three sons, and a daughter who passed away at the age of eight. Dr. Christie was left a widower in 1910. In 1911 he married Ida Lewis Mason who died in 1944.

Dr. Christie took an active interest in his community and county. He was one of the incorporators of the Bank of Long Prairie, and was interested in banking circles in neighboring towns. He was a past president of the Upper Mississippi Medical Society, president of the local board of education for upwards of twenty years, served as president of the village council and was president of the county pension board for a number of years.

In 1938, Dr. Christie, along with Dr. B. F. Van Valkenburg, was honored at a dinner by the Long Prairie Commercial Club, and tribute was paid to his long medical service and his contributions to community development.

A member of the Masonic Lodge, the Upper Mississippi Medical Society, the Minnesota State and American Medical Associations, the Great Northern Surgeons' Association, Dr. Christie gave valuable medical and civic service to his community for a long period of time until his retirement a few years ago. He will long be remembered by his many friends.

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Of General Interest

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Annual meeting—New Ulm, Minnesota, September 8, 1947.

* * *

In September Dr. G. M. A. Fortier, Little Falls, expects to move into his new one-story medical office building, on which construction was begun in June.

* * *

A new member of the More Hospital and Clinic staff, in Eveleth, is Dr. Adrian W. Davis, who became a resident of Eveleth during the first week of June.

* * *

Dr. Sheldon Clark Reed of Harvard University has been appointed director of the Dwight Institute of Human Genetics, effective in September, 1947.

* * *

Dr. R. G. Tinkham, who is associated with Dr. John Eiler in Park Rapids, enrolled for a course in obstetrics and gynecology in Chicago during June.

* * *

Medical dean of Crow Wing County with fifty-one years of practice behind him, Dr. John Thabes, Sr., spoke on the progress of medical science at a meeting of the Brainerd Lions Club on May 14.

A week of vacationing in Wisconsin during June climaxed the end of his first year of practice in Glenwood for Dr. J. T. Gericke of that city.

* * *

Dr. T. J. Hughes, a member of the Mayo Clinic staff for four years, is now associated with a group of physicians in Corona, California, and is specializing in ear, nose and throat and maxillofacial surgery.

* * *

Dr. C. K. Maytum, Rochester, spoke on "Functional Respiratory Disturbance With Hyperventilation as a Cause of Symptoms" at the meeting of the South Dakota State Medical Association in Rapid City on June 3.

* * *

Dr. S. A. Slater, Worthington, and Dr. Carl Howson, Los Angeles, were chosen active vice presidents of the National Tuberculosis Association on June 19 at the annual meeting of the association in San Francisco.

* * *

Eighty-five year old Dr. A. M. Ridgway, Annandale, who is still maintaining his medical practice, was honored by the Annandale Masonic Lodge on June 2 was presented with a fifty-year jewel.

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Dr. Catherine Burns, daughter of the late H. D. Burns, Albert Lea, recently became associated in medical practice with Dr. S. A. Whitson and Dr. J. P. Person in offices at Albert Lea.

* * *

One of the speakers at the annual convention of the AMA in June was Dr. W. G. Workman, Tracy, who with Mrs. Workman traveled by plane to Atlantic City for the meeting.

* * *

New offices for the practice of medicine in the specialty of eye, ear, nose and throat diseases have been opened in International Falls by Dr. R. Hugh Monahan, Jr., of that city.

* * *

Dr. William C. Dodds, a member of the Bratrud Clinic in Thief River Falls for more than a year, has entered into partnership with Dr. Donald M. Houston of Park Rapids and has begun his practice in that city.

* * *

On May 29 Dr. W. W. Brown terminated his practice in Isle and began a vacation trip to California. Upon his return he planned to establish his medical practice in Wilmont.

* * *

Dr. Henry E. Michelson, Minneapolis, was elected chairman of the Section of Dermatology and Syphilology at the recent meeting of the American Medical Association in Atlantic City.

* * *

At the annual meeting of the North Dakota State Medical Association, held in Fargo on May 27, Dr. H. O. McPheeters, Minneapolis, presented a paper entitled, "Peripheral Circulatory Disease and the General Practioner."

* * *

In the alphabetic roster of members of the Minnesota State Medical Association, printed in the May issue of MINNESOTA MEDICINE, Dr. Roberta G. Rice's address was incorrectly listed as Aitkin. It should have been Rochester.

* * *

Tracy acquired a new physician in May when Dr. O. J. Esser, formerly of Gibbon, became an associate of Dr. A. D. Hoidale and Dr. W. G. Workman in their clinic in Tracy. Dr. Esser recently completed postgraduate study in New York City.

* * *

Brazilian surgeon Dr. Paulo P. L. Baptista, who has been studying chest surgery and tuberculosis at Glen Lake Sanatorium for two years, recently left the sanatorium to undertake further study in surgical pathology elsewhere.

* * *

Recently elected as first vice chairman of the Minnesota Committee on Local Health Services was Dr. D. A. Dukelow of Minneapolis. The committee is beginning to form plans for resubmitting a new health bill to the next state legislature.

Since January, Dr. Frederick Kottke, Minneapolis, who has a traveling medical fellowship, has studied in Rochester, in New York City, and in Warm Springs, Georgia. His major field of study has been physical medicine, especially as it concerns poliomyelitis.

* * *

Back at work after a seven-month rest to improve his health, Dr. I. F. Seeley, Northfield, has resumed his medical practice. Dr. Seeley spent most of the past winter in Arizona and returned to Northfield in early spring.

* * *

Dr. Robert M. Ahrens, son of Dr. and Mrs. Albert E. Ahrens of Saint Paul, received his degree of doctor of medicine from New York Medical College on June 11. Dr. Ahrens served his internship at Ancker Hospital, Saint Paul.

* * *

Dr. Alvin L. Schultz, Minneapolis, was one of forty-one members of the Ohio State University hospital staff who received certificates of service at the annual dinner for medical and dietary interns at Columbus, Ohio, during June.

* * *

Three Rochester physicians, Dr. M. C. Petersen, superintendent of the Rochester State Hospital, and Dr. H. P. Heersema and Dr. Fred Moersch, Mayo Clinic staff members, attended the annual meeting of the American Psychiatric Association held in New York City during May. Dr. Moersch is a counsellor of the association.

Dr. H. F. Colfer, fellow in medicine in the Mayo Foundation, Rochester, has been granted the National Research Council award for study with Professor E. Adrian, chairman of the Department of Physiology at Cambridge University in England, and will begin a one-year fellowship at Cambridge in the fall.

* * *

Formerly of Watertown, South Dakota, Dr. Stephen Hanten has become associated in medical practice in Caledonia with Dr. J. J. Ahlfs. A graduate of Creighton University in Omaha, Nebraska, Dr. Hanten served his internship at St. Mary's Hospital in St. Louis, Missouri. He was in the army for five years during World War II.

* * *

Dr. Mario Fischer, Duluth health director and acting St. Louis County health officer, was a member of the Minnesota delegation which attended the forty-third annual meeting of the National Tuberculosis Association in San Francisco during June. Dr. Fischer is a director of the association.

* * *

Formerly of Kenyon, Dr. Clifford N. Rudie has opened offices in Staples for the practice of medicine and surgery. A graduate of the University of Louisville, Kentucky, Dr. Rudie served his internship at Miller Hospital in Saint Paul. He practiced in southern Minnesota for a number of years.

* * *

The association of Dr. Henry J. Borge in the practice of medicine and surgery has been announced by Dr.

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R. C. Radabaugh, Hastings. Dr. Borge, a graduate of Northwestern University Medical School and a veteran of four years of army medical service, began his medical practice with Dr. Radabaugh in May.

* * *

Dr. Albert V. Stoesser, Clinical Professor of Pediatrics, Medical School, University of Minnesota, and Director of Allergy Clinics of the Department of Pediatrics, was elected a member of the Board of Regents of the American College of Allergists at the annual meeting held in Atlantic City in June.

* * *

Appointment of Dr. M. B. Llewellyn to the position of pathologist at Asbury Hospital, Minneapolis, has been announced. Dr. Llewellyn, a graduate of the University of Minnesota Medical School, has been associated with the pathology departments of Wayne University and Henry Ford Hospital, Detroit.

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Dr. F. L. Stutzman, formerly of Newport, now attached to an army preventive medicine section in Manila, Philippine Islands, has been promoted to the rank of captain. A graduate of the University of Minnesota Medical School, Dr. Stutzman entered the army in April, 1946. He has been stationed in the Philippines since September, 1946.

* * *

Dr. George B. Eusterman of the Mayo Clinic has been awarded the Julius Friedenwald medal for outstanding contributions in his specialty of gastroenterology. The award was presented at the annual dinner of the American Gastroenterological Association, held at Atlantic City in conjunction with the AMA meeting in June. Dr. Eusterman was president of the association twenty-five years ago.

* * *

At a meeting of the American College of Chest Physicians in Atlantic City in early June, Dr. Lewis S. Jordan, superintendent of Riverside Sanatorium at Granite Falls, stated that on the basis of studies carried out in Minnesota the eradication of tuberculosis could probably be accomplished within the life span of the coming generation.

* * *

Seventy-five year old Dr. A. Cyr of Barnesville had the honor of pitching the first ball of the season on May 25 when the Barnesville baseball team opened its Red River League schedule with a game with Downer. In a brief ceremony which preceded the throwing of the first ball, Dr. Cyr was presented with an engraved pen and pencil set.

* * *

Dr. George McGeary, Jr., son of Dr. George McGeary, Sr., of Minneapolis, has joined Dr. M. I. Hauge in Clarkfield to form the Clarkfield Clinic.

A graduate of the University of Minnesota Medical School, Dr. McGeary, Jr., served his internship at Ancker Hospital in Saint Paul. He was recently discharged from the army.

* * *

At the recent meeting of the International Congress on Obstetrics, held in Dublin, Ireland, from July 5 to 12, Dr. Ann Arnold of Minneapolis was a member of the American delegation. Dr. Arnold, together with her daughter, Nancy, flew to London in June and planned to travel extensively in Ireland and Scotland in addition to attending the seven-day obstetrical meeting.

* * *

Dr. Arlie R. Barnes, Rochester, was elected president of the American Heart Association at a meeting in Atlantic City in June at which 100 laymen were admitted

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to membership in the association. Dr. Barnes succeeds Dr. Howard F. West of Los Angeles. Election of the laymen, who included Harold Stassen, Samuel Goldwyn and Mrs. Clare Booth Luce, was made in accordance with a newly approved reorganization of the association.

* * *

A modern medical office building was recently opened in Belle Plaine by Dr. H. M. Juergens of that city. Architectural features of the offices include the newest type of fluorescent lighting and a radiant heating system, in which the entire floor serves as a radiator. The building has been under construction since last winter when Dr. Juergens' old offices were destroyed in a fire.

* * *

A certificate of merit was awarded to Dr. Karl Pfuetze, superintendent of Mineral Springs Sanatorium, and Dr. William H. Feldman and Dr. H. C. Hinssaw, of the Mayo Foundation, for their exhibit at the AMA convention in Atlantic City in June. Their exhibit, which demonstrated the use of streptomycin in the treatment of tuberculosis, was entitled, "Streptomycin: Experimental and Clinical Observations."

* * *

Three thousand miles were covered by Dr. and Mrs. George Friedell, Ivanhoe, during a two-week June vacation trip which included attendance at the annual convention of the AMA in Atlantic City. A small family reunion was staged at the AMA meeting when Dr. Friedell met with his brother, Dr. Aaron Friedell of Minneapolis, and his nephews, Dr. H. L. Friedell of Cleveland and Dr. Morris Friedell of Chicago.

* * *

Thirteen physicians are co-operating this summer in a revised health program for 4-H members of Nobles County. Conducting examinations and determining health conditions of the 4-H members are Doctors E. A. Kilbride, B. O. Mork, Sr., B. O. Mork, Jr., P. W. Harrison, C. R. Stanley, F. L. Schade, R. P. Hallin, O. M. Heiberg, all of Worthington; E. W. Arnold, D. E. Nealy, L. A. Laikila, all of Adrian; D. J. Halpern, Brewster, and B. M. Stevenson, Fulda.

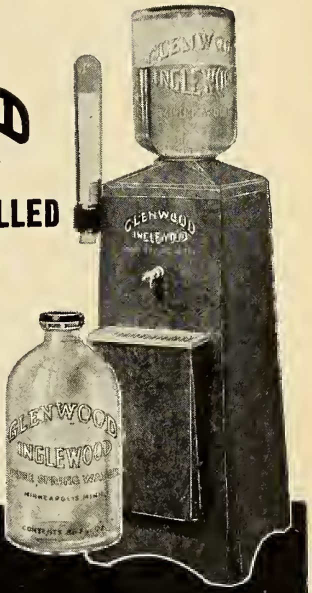
* * *

Two brothers are now practicing medicine together in Holdingford. Dr. E. J. Schmitz has announced that his brother, Dr. Glenn Schmitz, has joined him in practice at Holdingford, fulfilling a long-held ambition of both brothers.

A graduate of St. Louis University Medical School, Dr. Glenn Schmitz interned at Wheeling Hospital in West Virginia and then served in the army from 1945 until February of this year.

* * *

In Europe to attend a medical conference, Dr. Hulda Thelander, Little Falls, writes that living conditions in Denmark are extremely restricted, that rationing is severe, and that the Danish people have no heat, very little butter or meat, and no fresh fruit, coffee, tea or chocolate. Sweden, on the other hand, has a liberal rationing system and, judging by meals served and store-window displays, is a rich country compared with the



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rest of Europe. That, Dr. Thelander writes, does not help the Danish people, however, for the Danes can take only $5 with them if they leave Denmark and they cannot get permission to leave without a good reason.

* * *

Dr. G. B. New, Rochester, discussed "Nasal Deformities, Congenital and Acquired: Methods of Treatment" at the meeting of the Canadian Otolaryngological Society at Minaki Lodge, Ontario, Canada, during the week of June 23.

* * *

At a meeting of the Wyoming State Medical Society during the week of June 23, Dr. J. Grafton Love, Rochester, spoke on "Injuries to the Central Nervous System" and "Spinal Cord Tumors and Protruded Disks as Causes of Backache and Sciatic Pain."

* * *

On July 1, Dr. A. L. Koskela, formerly of Grand Rapids, began an association with Dr. G. A. Miners in the Deer River Clinic. Since his return from military service, Dr. Koskela has been associated with Dr. M. J. McKenna, Dr. F. M. Jolin and Dr. A. V. Grinley of Grand Rapids.

Dr. H. R. Anderson, a member of the Deer River Clinic for the past twelve years, has withdrawn from the clinic and moved to to Arizona.

* * *

Mayo Clinic staff members Dr. P. A. O'Leary and Dr. C. F. Code of Rochester were on the program of the Canadian Medical Association meeting in Winnipeg, Canada, during the week of June 23. Dr. O'Leary spoke on the subjects, "The Present Status of Penicillin in the Treatment of Syphilis" and "Xanthomatoses." Dr. Code discussed a series of papers on the role of histamine in allergy and also presented a paper entitled, "A Study of the Action of Antihistamine Drugs in the Skin of Human Beings."

* * *

On his fiftieth anniversary as a practicing physician, Dr. Fred H. Rollins of St. Charles celebrated by attending a Chicago reunion of former classmates from the class of 1897 of Rush Medical College.

With the exception of a year at White Rock, South Dakota, and at West Salem, Wisconsin, Dr. Rollins has spent his entire medical career at St. Charles. A public-spirited citizen, he has served the community as mayor and for the past forty years as a member of the school board.

* * *

A new physician in Princeton is Dr. W. F. McManus, formerly of Chicago, who is now associated in the practice of medicine with Dr. W. R. Blomberg of Princeton. Dr. McManus graduated from the College of Medicine of Loyola University in 1938 and then served his internship at St. Anne's Hospital, Chicago. After practicing in Chicago for three years, he entered the army and served for thirty-nine months, part of the time as chief of the surgical and laboratory staffs of two hospitals in Florida.

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A pre-medical student at the University of Minnesota, Jason Aronson of Little Falls is studying socialized medicine in England this summer. One of forty University students selected by a faculty committee to study conditions and people in Europe for two months, Aronson planned to concentrate on government-sponsored medical programs, considering advantages and disadvantages, gathering information on the attitudes of the laity and the professional men. Students participating in the European study program were selected on the basis of scholarship, leadership and background in their chosen field.

* * *

Two University of Minnesota medical scientists, Dr. Maurice B. Visscher and Dr. John J. Bittner, are touring Austria and Hungary this summer as members of a ten-man team of American and Swiss physicians to promote international exchange of medical and scientific knowledge.

Dr. Visscher, head of the Department of Physiology of the University of Minnesota, is chairman of the group, which is sponsored by the United Nations.

Dr. Bittner, professor of cancer biology at the University of Minnesota, who will tell European physicians of recent development in cancer research, was chosen as president of the American Association for Cancer Research at a meeting on June 2.

Main topics to be discussed by members of the ten-man team at medical meetings in Austria and Hungary include the latest developments in surgery, poliomyelitis, cancer, medicine and psychiatric research.

Red Wing physician Dr. L. E. Claydon, who has circled the globe three times, made seventeen Atlantic crossing and visited every continent in the world, completed his fifty-second year in the practice of medicine on June 12.

A graduate of the University of Minnesota Medical School, Dr. Claydon began his medical practice with Dr. M. H. Cremer at Mezeppa in 1895. After seven years in Mezeppa the two moved to Red Wing and established their practice there. Since 1900, when he went to Germany and Norway for additional medical study. Dr. Claydon has gone on some type of world jaunt every few years, but has always returned to his practice in Red Wing. At the present he has no thoughts of retiring.

* * *

Among the speakers at the forty-third annual meeting of the National Tuberculosis Association in San Francisco in June were Dr. J. A. Myers, professor of medicine at the University of Minnesota, and Dr. H. C. Hinshaw of the Mayo Foundation, Rochester. Dr. Myers participated in a panel discussion on the use of BCG vaccine in tuberculosis. Dr. Hinshaw, vice president of the association, spoke on recent research in tuberculosis and gave an evaluation of the use of streptomycin in the treatment of tuberculosis. President of the National Tuberculosis Association is a former Minnesota man, Dr. William P. Shepard, now of San Francisco, who was formerly on the staffs of the Minnesota State Department of Health and the University of Minnesota School of Public Health.

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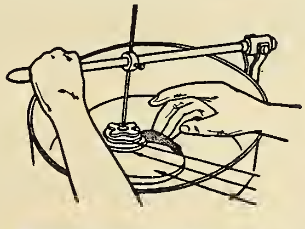

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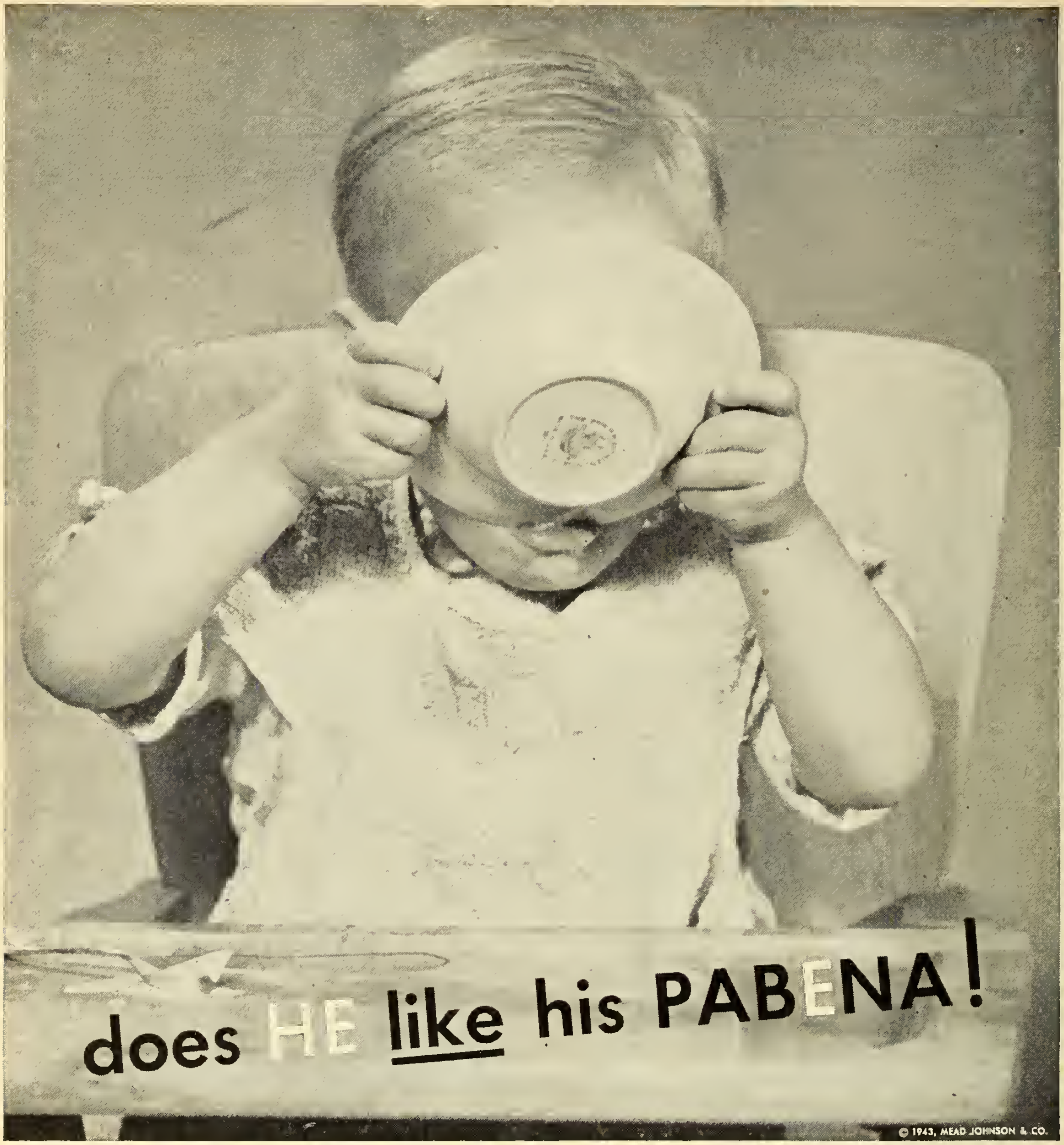
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Volume 30 **August, 1947** **No. 8**

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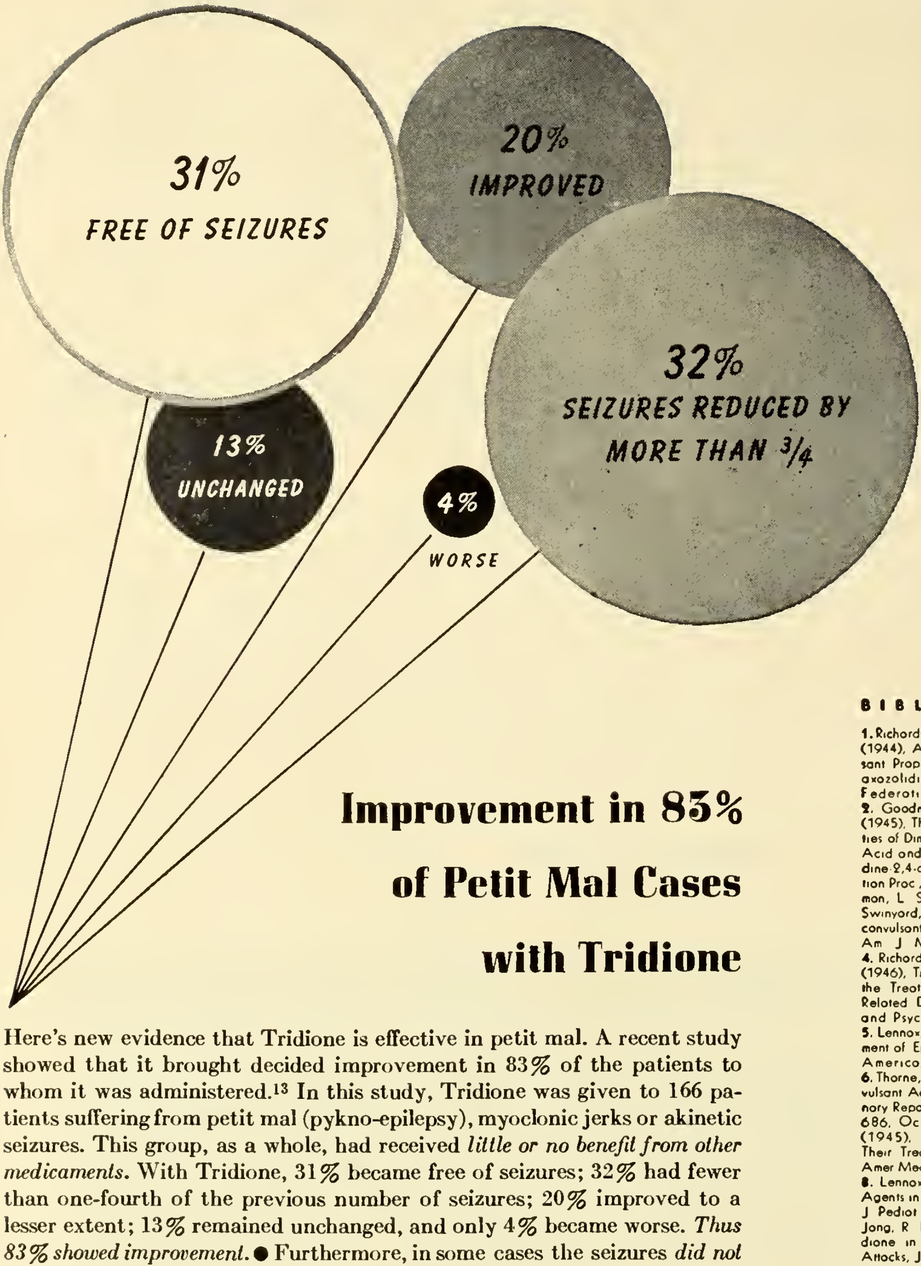

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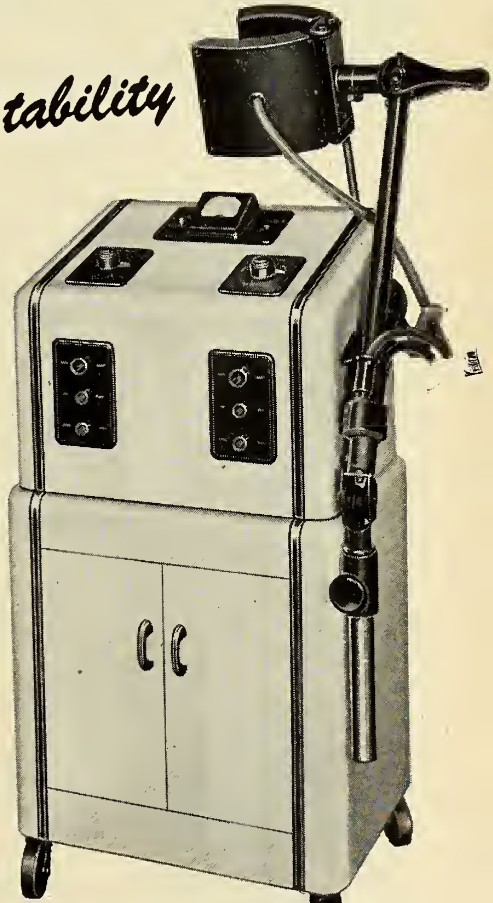

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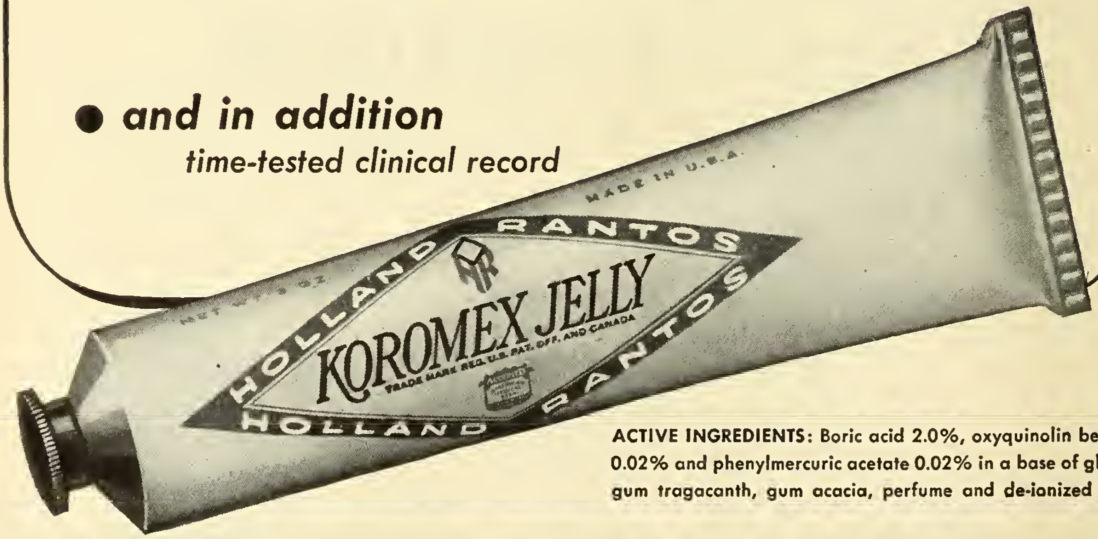
MADE IN U.S.A.
NET WT 3 OZ
HOLLAND RANTOS
KOROMEX JELLY
TRADE MARK REG. U.S. PAT. OFF. AND CANADA
HOLLAND RANTOS

ACTIVE INGREDIENTS: Boric acid 2.0%, oxyquinolin benzoate 0.02% and phenylmercuric acetate 0.02% in a base of glycerin, gum tragacanth, gum acacia, perfume and de-ionized water.

ACCEPTED
AMERICAN MEDICAL ASSN
Council on Pharmacy and Chemistry

Prescribe Koromex Jelly with Confidence

. . . send for literature

HOLLAND-RANTOS COMPANY, INC., 551 FIFTH AVENUE, NEW YORK 17, N. Y.

Benzedrine Inhaler, N. N. R.
". . . is quite effective in the clearing of nasal congestion due to allergy or infection."

Feinberg. S. M.: Allergy in Practice, Chicago, The Year Book Publishers, Inc., 1944, p. 502.

Your hay fever patients will be grateful . . . particularly between office visits . . . for the relief of nasal congestion afforded by Benzedrine Inhaler, N. N. R. The Inhaler may make all the difference between weeks of acute misery and weeks of comparative comfort.

Benzedrine Inhaler

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Each Benzedrine Inhaler is packed with racemic amphetamine, S.K.F., 250 mg.; menthol, 12.5 mg.; and aromatics.

a better means of nasal medication

Smith, Kline & French Laboratories
Philadelphia, Pa.

BENZEDRINE
Reg. U. S. Pat. Off.
INHALER

Putting palatability into high-protein diets

Swift's Strained Meats

Prepared originally for infant feeding now used extensively for special diet cases

Good food plays a psychologically as well as a physiologically important part in aiding recovery. This is one reason so many doctors are now using Swift's Strained Meats for patients on high-protein, low-residue diets containing chemically and physically non-irritating foods. Swift's Strained Meats provide a palatable, *natural* source of complete, high-quality proteins, B vitamins and minerals for patients whose condition prohibits the use of meats prepared in the ordinary manner. Each of the six kinds: beef, lamb, pork, veal, liver and heart, offers a tempting, distinctive meat flavor more readily accepted by patients, even when normal appetite is impaired.

Lean meat—strained fine enough for tube-feeding

Swift's Strained Meats, developed originally for feeding to young babies, are prepared from selected, lean U. S. Government Inspected Meats. They are carefully trimmed to reduce fat content to a minimum. The meats are slightly salted and strained so fine they will pass through the nipple of a nursing bottle . . . may easily be used in tube-feeding. Convenient to use—especially for patients at home—Swift's Strained Meats are ready to heat and serve! Each vacuum-sealed tin contains 3½ ounces of meat.

Swift's Diced Meats—tender, juicy cubes

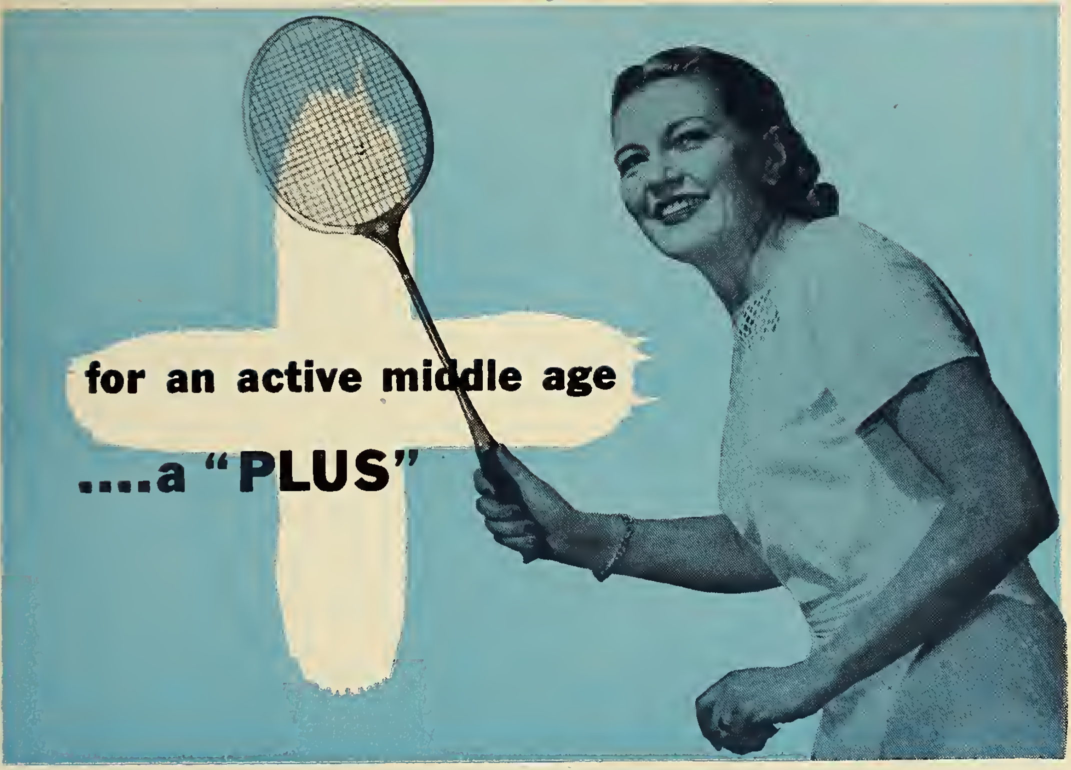
For soft, smooth, high-protein and low-residue diets, these small cubes of lean meat offer new convenience and appetizing variety. Swift's Diced Meats are tender juicy pieces of meat, easily mashed into smaller particles if desired. 5 ounces per tin.

SWIFT
QUALITY FOODS
Swift's Meats
FOR BABIES
Strained BEEF
WITH BEEF BROTH ADDED

We will be glad to send you further information about Swift's Strained and Swift's Diced Meats with samples. Write Swift & Company, Dept. BF, Chicago 9, Illinois.

All nutritional statements made in this advertisement are accepted by the Council on Foods and Nutrition of the American Medical Association.

SWIFT & COMPANY • CHICAGO 9, ILLINOIS


for an active middle age
....a "PLUS"

The "sense of well-being" so frequently reported by patients following "Premarin" therapy often means the difference between an active, enjoyable middle age and a sedentary one. Not only prompt relief from distressing menopausal symptoms but also a brighter mental outlook which may be translated into a desire "to be doing things"...such are the results which may usually be expected following "Premarin" administration . . . therapy with a "plus."

"Premarin" provides effective estrogenic therapy through the oral route with comparative freedom from untoward side effects.

"Premarin" is available as follows:

Tablets of 2.5 mg.	bottles of 20 and 100.
Tablets of 1.25 mg.	bottles of 20, 100 and 1000.
Tablets of 0.625 mg	bottles of 100 and 1000.
Liquid, containing 0.625 mg. in each 4 cc. (1 teaspoonful)	bottles of 120 cc.

While sodium estrone sulfate is the principal estrogen in "Premarin," other equine estrogens . . . estradiol, equilin, equilenin, hippulin . . . are also present as water-soluble sulfates. The water solubility of conjugated estrogens (equine) assures rapid absorption from the gastrointestinal tract.

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CONJUGATED ESTROGENS
(equine)

"Premarin"®

AYERST, McKENNA & HARRISON Limited

22 EAST 40th STREET, NEW YORK 16, N. Y.

The First Prescription...

The First Prescription was written in Egypt about 3700 B.C. Later, when the color of an herb was believed to indicate which planet it was under and for what disease it should be used, herbs were compounded with long prayers for their success to Jupiter, largest of the planets. Next, the prayers were condensed, written over the command "Recipe!" (Take!), and finally shortened to ℞ (R plus a vestige of the old sign of Jupiter).

The First Dental Prescription was Galen's, about 165 A.D.—a smooth paste for the cavity of an aching tooth (carrot, anise and parsley seeds, saffron, black pepper and opium).

Between those prescriptions—about 2030 B.C., in the Code of Hammurabi—broke the dawn of malpractice law. ("*If the doctor has caused a gentleman to die, one shall cut off his hands . . . if he has caused a slave's death, he shall render slave for slave.*")

The First Prescription Today, for most doctors, is the *complete protection* and the *confidential service* provided by a Medical Protective policy.

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MEDICAL PROTECTIVE COMPANY
FORT WAYNE, INDIANA

Professional Protection EXCLUSIVELY . . . *since 1899*

MINNEAPOLIS Office: Stanley J. Werner, Representative, 816 Medical Arts Building, Telephone Atlantic 5724

"Better Call the Doctor"

A familiar phrase in these United States. Self sacrificing, and willing to help at all times, the doctor has indeed earned his high place in our social esteem.

Right now we're "calling the doctor." Physicians and hospitals across the country are seriously concerned over the shortage of trained nurses available. We feel that in this case, too—**the doctor is best able to solve the problem.** A well trained corps of nurses is vitally necessary to insure the high standard of medicine as we now know it.

Glenwood Hills Hospital—through its school of nursing—is anxious to cooperate with you in your effort to increase the number of nurses in your community. A student from your locality will result in increased nursing assistance to you in the near future. Your help is greatly needed in recruiting candidates for this profession. For full information write Miss Margaret Chase, R.N., B.S., Director, School of Nursing.

"Hospital administrators and doctors throughout the country are seriously concerned over the dangerously inadequate nursing care available. Results of a recent survey indicate that 55 to 60 per cent of the required amount is obtainable . . .

" '. . . approved hospitals should provide training for such vocational nurses by means of short courses.'

"The doctor is responsible for the care of the patient. In order to meet this obligation, the medical staff together with the hospital and nursing administrators, are urged to undertake the development and execution of this program."[1]

"It is time that some of the present-day advantages of a nursing career be made known to young women."[2]

ONE YEAR NURSING COURSE

Glenwood Hills Hospitals are currently offering to qualified applicants a one year course in psychiatric nursing. All phases of the subject are skillfully presented by a capable and experienced faculty. TUITION IS FREE. Regular classes begin in January, June, and September.

SCHOOL OF PSYCHIATRIC NURSING

•

FALL CLASS will start in September

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Candidates for the September class should make reservations at once . . . School and health record must be reviewed and correspondence completed prior to acceptance.

Glenwood Hills Hospitals

3501 Golden Valley Road : Route Seven : Minneapolis, Minn.

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1. Irvin Abell, M.D., Chairman, Bd. of Regents, Am. Col. Surgeons; Am. Jl. of Nursing, March 1947.
2. A. E. Hedback, M.D., Editor, Modern Medicine; Jl.-Lancet, April 1947.

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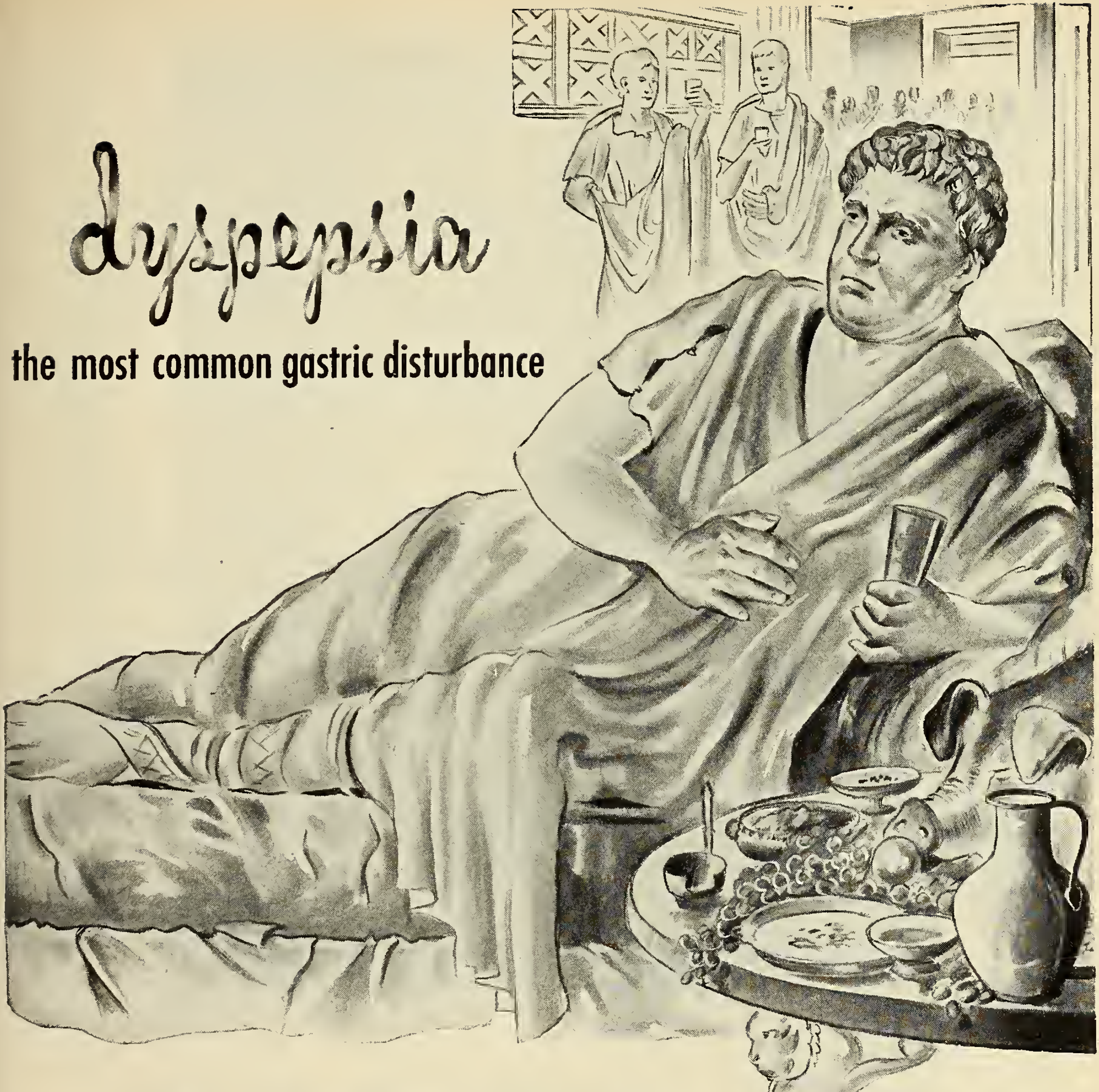

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the most common gastric disturbance

"Dyspepsia" due to hyperchlorhydria is the most common of all gastric disturbances. . . By prescribing Creamalin for the control of hyperacidity, the physician is assured of prolonged antacid action without the danger of alkalosis or acid rebound. Through the formation of a protective coating and a mild astringent effect, nonabsorbable Creamalin soothes the irritated gastric mucosa. Thus it rapidly relieves gastric pain and heartburn.

Creamalin

Brand of aluminum hydroxide gel

LIQUID IN 8 OZ., 12 OZ., AND 1 PINT BOTTLES

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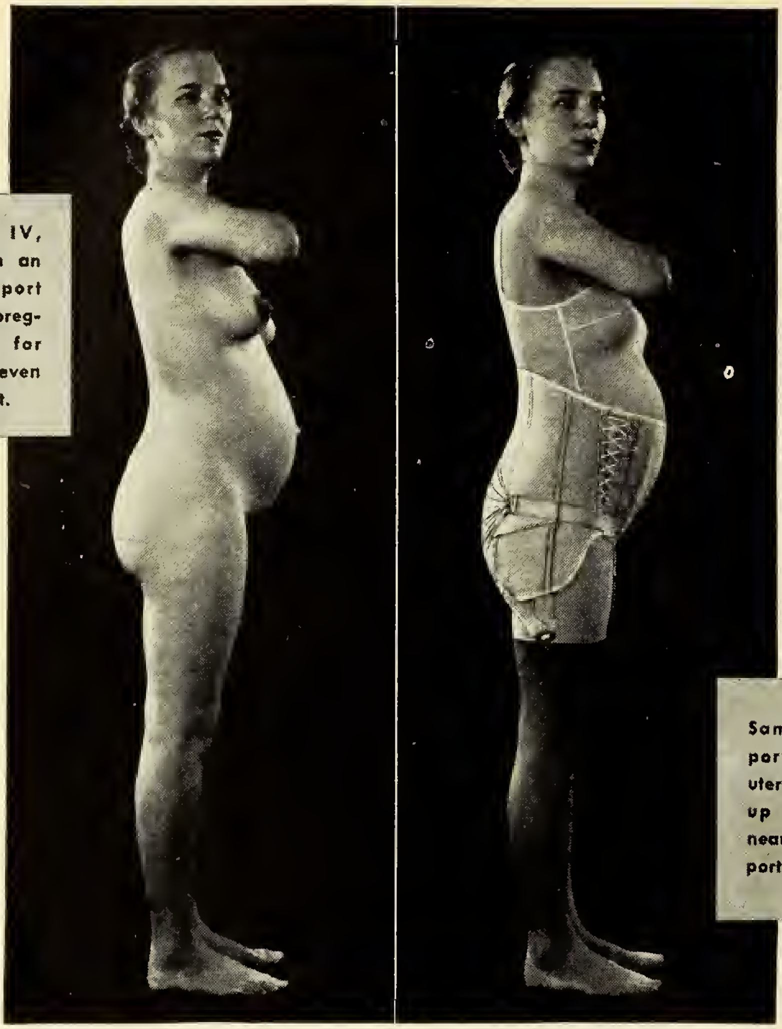
CREAMALIN, trademark Reg. U.S. Pat. Off. & Canada



Patient, para IV, has never worn an abdominal support during previous pregnancies. Came for support when seven months pregnant.

Same patient: Support applied. The uterus is being held up and back more nearly over the supporting joints.

Support During Pregnancy

CAMP

By relieving the forward and downward shift of the enlarged uterus, Camp prenatal supports take some of the tension from the abdominal muscles and fasciae, assist in the return of venous blood, prevent many backaches and give exceptional support to the softened joints of the pelvic girdle.

Experience shows that best results are obtained when prenatal supports are applied during the fourth month and worn faithfully throughout pregnancy.

S. H. CAMP AND COMPANY • JACKSON, MICHIGAN

World's Largest Manufacturers of Scientific Supports

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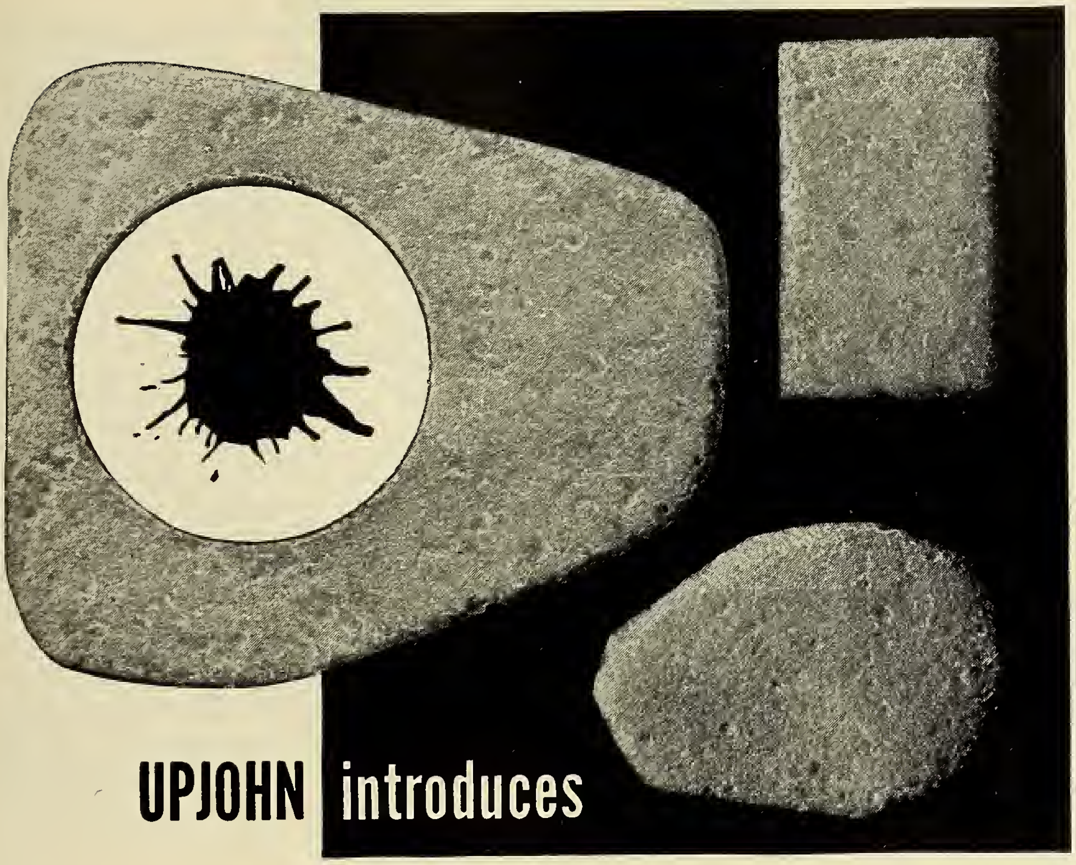

UPJOHN introduces

a new advance in the control of bleeding

The development of Gelfoam* by the Upjohn research laboratories marks a new advance in hemostasis. Gelfoam is a readily absorbable, easily cut and molded gelatin sponge which may be used with or without thrombin and may be left in situ without fear of tissue reactions. Gelfoam makes readily available biochemical hemostasis to simplify the clearing of oozing surfaces, the control of capillary bleeding, the arrest of trickling from small veins, and the staunching of annoying hemorrhage from resected tissues. It has a wide variety of indications in surgery and general practice. Gelfoam is a unique addition to the surgical armamentarium for the control of bleeding.

Upjohn
KALAMAZOO 99, MICHIGAN

FINE PHARMACEUTICALS SINCE 1886

Gelfoam

is made in sponges 20 x 60 x 7 mm., in size. Four sponges are packed in each jar.

*Trademark

PROLONGED
Barrier Action

1—Precoitus. Effective occlusion of cervical os by "RAMSES" Vaginal Jelly.

2—One hour postcoitus. Barrier action maintained by film of jelly.

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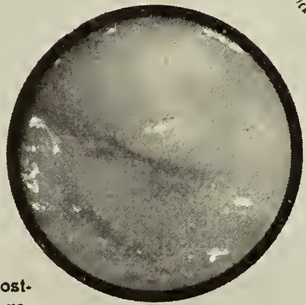
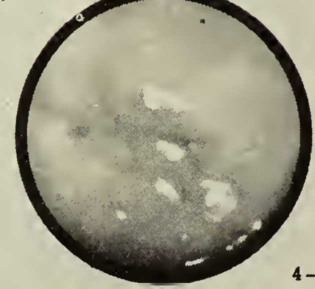


3—Four hours postcoitus. Uterine os remains occluded.



4—Ten hours postcoitus. Occlusion still manifest—barring the passage of sperm.

The direct-color photographs shown above establish the prolonged barrier action of "RAMSES"* Vaginal Jelly. For photographic purposes, the jelly, which has a transparent clarity, was stained with a nonspermatocidal concentration of methylene blue.

In addition to the barrier action provided by its exclusive gum base "RAMSES" Vaginal Jelly immobilizes sperm rapidly.

Tests by an accredited independent laboratory, supported by clinical work of an outstanding research organization, confirm the lack of irritation and toxicity under continuous use. For dependability in spermatocidal jelly specify

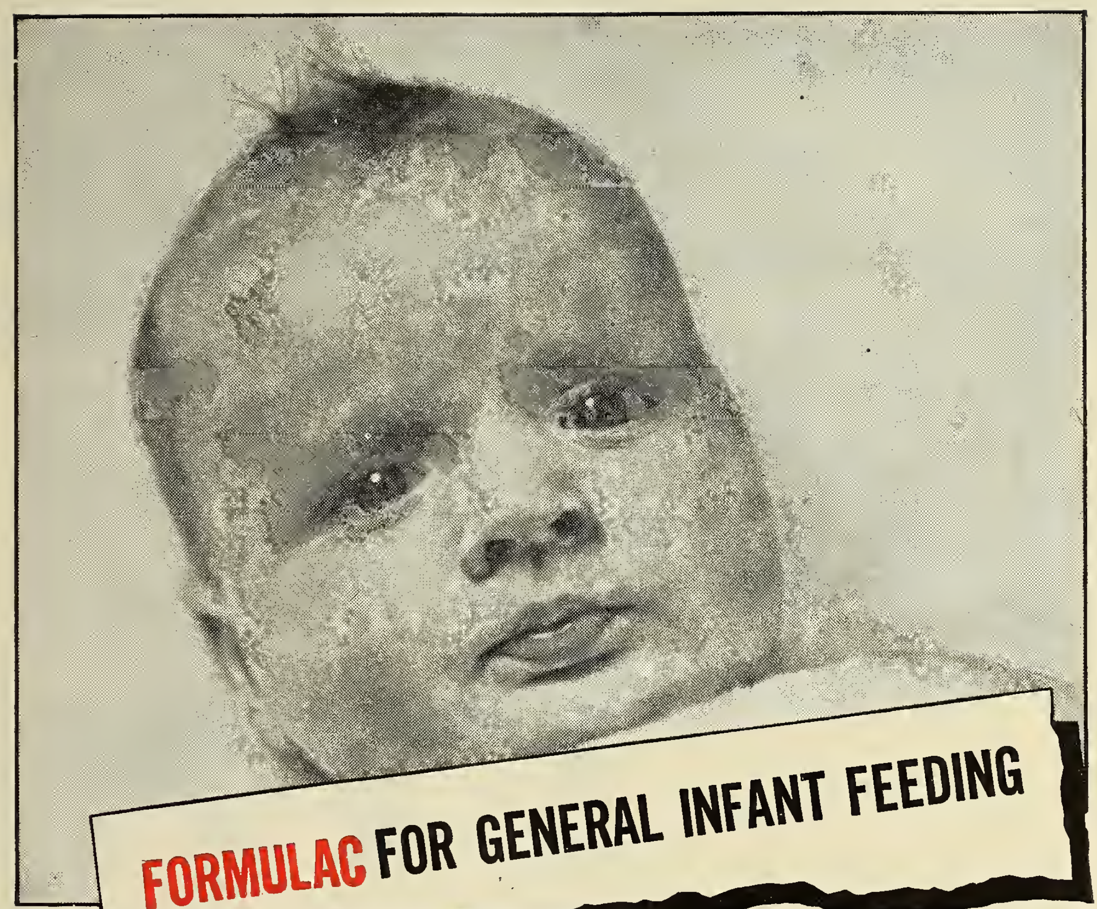
A MARK OF DEPENDABILITY Ramses

Ramses VAGINAL JELLY
TRADEMARK REG. U.S. PAT. OFF.

Active ingredients: Dodecaethyleneglycol monolaurate 5%; Boric Acid 1%; Alcohol 5%.

gynecological division **JULIUS SCHMID, INC.**
quality first since 1883
423 West 55th St., New York 19, N. Y.

*The word "RAMSES" is a registered trademark of Julius Schmid, Inc.



FORMULAC FOR GENERAL INFANT FEEDING

FORMULAC Infant Food provides a balanced and flexible formula basis for general infant feeding — both in normal and difficult diet cases.

A product of National Dairy research, FORMULAC is a concentrated milk in liquid form, fortified with all vitamins known to be necessary for proper infant nutrition. No supplementary vitamin administration is necessary with FORMULAC. The Vitamin C content is stabilized, assuring greater safety.

The only carbohydrate in FORMULAC is the natural lactose found in cow's milk—no other carbohydrate has been added. This permits you to prescribe both the amount and the type of carbohydrate supplementation required.

FORMULAC is promoted ethically, to the medical profession only. Clinical testing has proved it satisfactory in promoting normal infant growth and development. On sale in grocery and drug stores throughout the country, FORMULAC is priced within range of even modest incomes.

***Distributed by* KRAFT FOODS COMPANY**

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NEW YORK, N. Y.

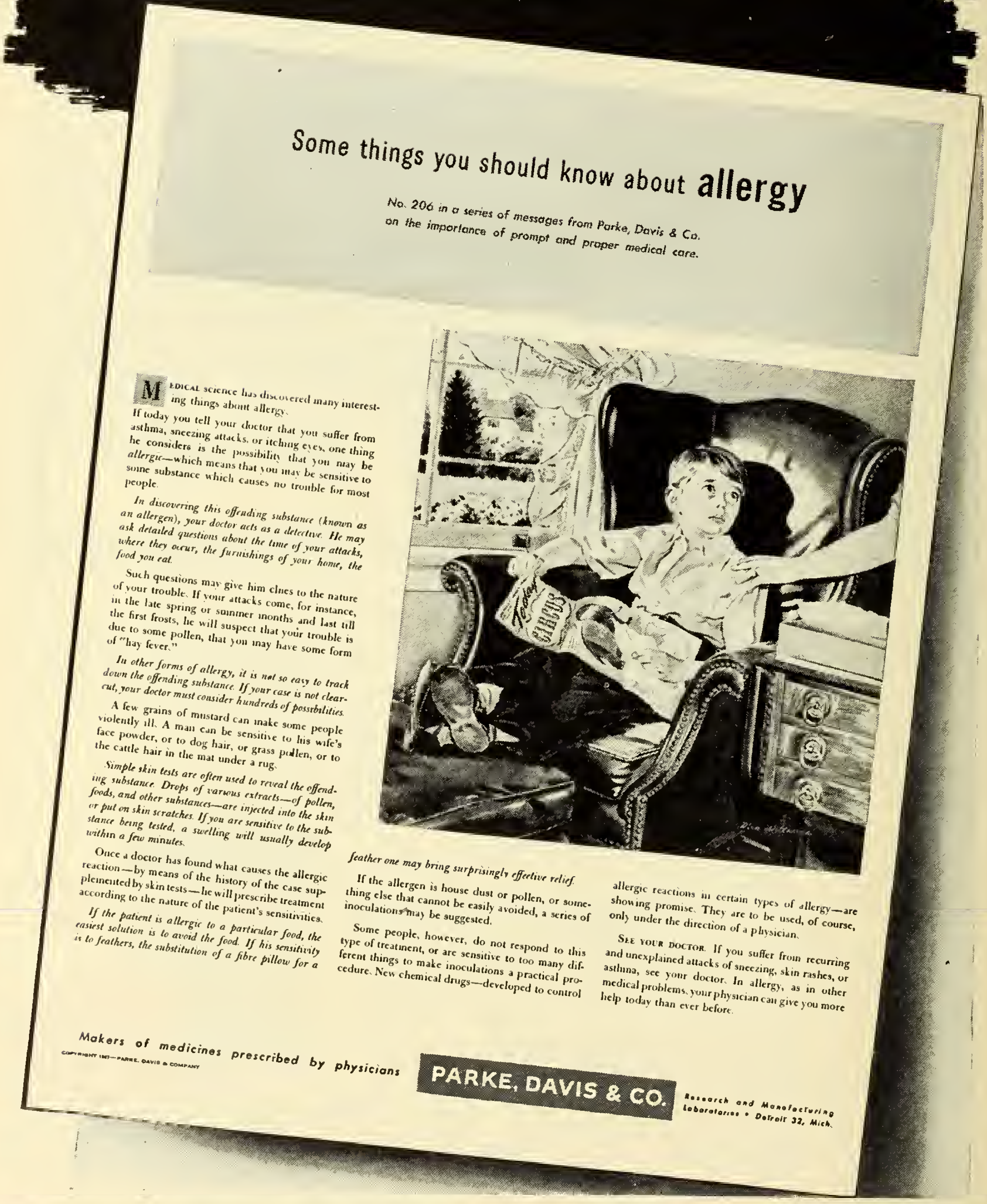
• For further information about FORMULAC, and for professional samples, mail a card to National Dairy Products Company, Inc., 230 Park Avenue, New York 17, N. Y.

Formulac
INFANT FOOD
ACCEPTED
COUNCIL ON FOODS AND NUTRITION
AMERICAN MEDICAL ASSOCIATION
NATIONAL DAIRY
Sealtest
PRODUCTS CORP.

The subject is: Allergy

The advice, as usual, is: "SEE YOUR DOCTOR"

In LIFE and other national magazines, Parke-Davis presents a timely message about allergy (shown below). It appears in full color . . . reaches an audience of nearly 23 million people. It is No. 206 in the "See Your Doctor" series published in behalf of the medical profession.


Today
CIRCUS

Some things you should know about allergy

No. 206 in a series of messages from Parke, Davis & Co. on the importance of prompt and proper medical care.

Medical science has discovered many interesting things about allergy.

If today you tell your doctor that you suffer from asthma, sneezing attacks, or itching eyes, one thing he considers is the possibility that you may be *allergic*—which means that you may be sensitive to some substance which causes no trouble for most people.

In discovering this offending substance (known as an allergen), your doctor acts as a detective. He may ask detailed questions about the time of your attacks, where they occur, the furnishings of your home, the food you eat.

Such questions may give him clues to the nature of your trouble. If your attacks come, for instance, in the late spring or summer months and last till the first frosts, he will suspect that your trouble is due to some pollen, that you may have some form of "hay fever."

In other forms of allergy, it is not so easy to track down the offending substance. If your case is not clear-cut, your doctor must consider hundreds of possibilities.

A few grains of mustard can make some people violently ill. A man can be sensitive to his wife's face powder, or to dog hair, or grass pollen, or to the cattle hair in the mat under a rug.

Simple skin tests are often used to reveal the offending substance. Drops of various extracts—of pollen, foods, and other substances—are injected into the skin or put on skin scratches. If you are sensitive to the substance being tested, a swelling will usually develop within a few minutes.

Once a doctor has found what causes the allergic reaction—by means of the history of the case supplemented by skin tests—he will prescribe treatment according to the nature of the patient's sensitivities.

If the patient is allergic to a particular food, the easiest solution is to avoid the food. If his sensitivity is to feathers, the substitution of a fibre pillow for a feather one may bring surprisingly effective relief.

If the allergen is house dust or pollen, or something else that cannot be easily avoided, a series of inoculations may be suggested.

Some people, however, do not respond to this type of treatment, or are sensitive to too many different things to make inoculations a practical procedure. New chemical drugs—developed to control allergic reactions in certain types of allergy—are showing promise. They are to be used, of course, only under the direction of a physician.

See your doctor. If you suffer from recurring and unexplained attacks of sneezing, skin rashes, or asthma, see your doctor. In allergy, as in other medical problems, your physician can give you more help today than ever before.

Makers of medicines prescribed by physicians

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Research and Manufacturing Laboratories • Detroit 32, Mich.

for the approaching school days

Diphtheria
Tetanus
Pertussis

1

IMMUNITY FROM ALL THREE IN ONE SOLUTION

When you are planning for the inoculations to be given as school days roll around again, remember the convenience and efficacy of National Drug's "D-T-P." Immunity against these three diseases is conferred with three injections at intervals of from 3 to 4 weeks.

"D-T-P" is available in multiple-dose vials.

"D-T-P"

DIPHTHERIA-TETANUS-PERTUSSIS COMBINED. ALUM PRECIPITATED

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PHARMACEUTICALS, BIOLOGICALS, BIOCHEMICALS FOR THE MEDICAL PROFESSION

ONE PINT
CARTOSE
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A Mixed Carbohydrate for Supplementing Milk
FOR INFANT FEEDING
As Directed by Physician
DEXTRINS - MALTOSE - DEXTROSE
hydrolyzed from pure starch providing
—spaced absorption, uniform composition
—freedom from irritating impurities
—a hermetic seal of high vacuum
Two tablespoonfuls equal 1 fl. oz.
120 calories per fl. oz.
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Carbohydrates as protein sparers have particular significance in infant nutrition, which requires a high order of efficient utilization of protein for an active metabolism.

CARTOSE* is well tolerated; its content of dextrins in association with maltose and dextrose minimizes gastrointestinal discomfort due to an excessive concentration of readily fermentable sugars in the gastrointestinal tract.

CARTOSE is liquid, facilitating rapid, exact formula preparation. It is compatible with any formula base—liquid, evaporated, or dried milk.

SUPPLIED: In clear glass bottles containing 1 pt. Two tablespoonfuls (1 fl. oz.) provide 120 calories. Available through recognized pharmacies only.

CARTOSE
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Mixed Carbohydrates

*The word CARTOSE is a registered trademark of H. W. Kinney & Sons, Inc.

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We Provide . . .

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DEPENDABLE PHARMACEUTICALS

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- You can depend upon Dorsey products for unvarying purity and potency, for they are made under rigidly standardized conditions. Laboratory and manufacturing equipment, personnel and procedure are constantly protecting your treatment with Dorsey drugs.

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PURIFIED SOLUTION OF LIVER-DORSEY
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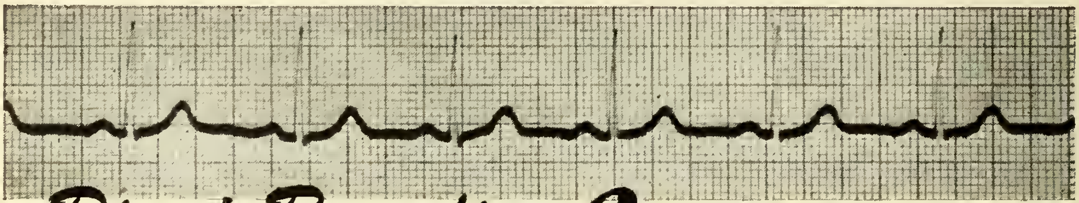
Modern ELECTRO-CARDIOGRAPHY



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Portable, rugged, electrically operated without batteries. Cardiotron is available with or without stand.

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Electrocardiograph...

With more than 1200 now in use throughout the world, the Cardiotron has established the principle of instantaneous recording in general clinical electro-cardiography.

The Cardiotron is fast, accurate and sensitive. It makes an *immediate* black and white cardiogram—on *permanent* chart paper. It is free from skin resistance errors. It reveals more information than any other electrocardiograph instrument.

IMPORTANT: Factory-supervised installation and service are available in most parts of the world. Good deliveries are scheduled. Cardiotron is sensibly priced.

Send for 12-page descriptive booklet

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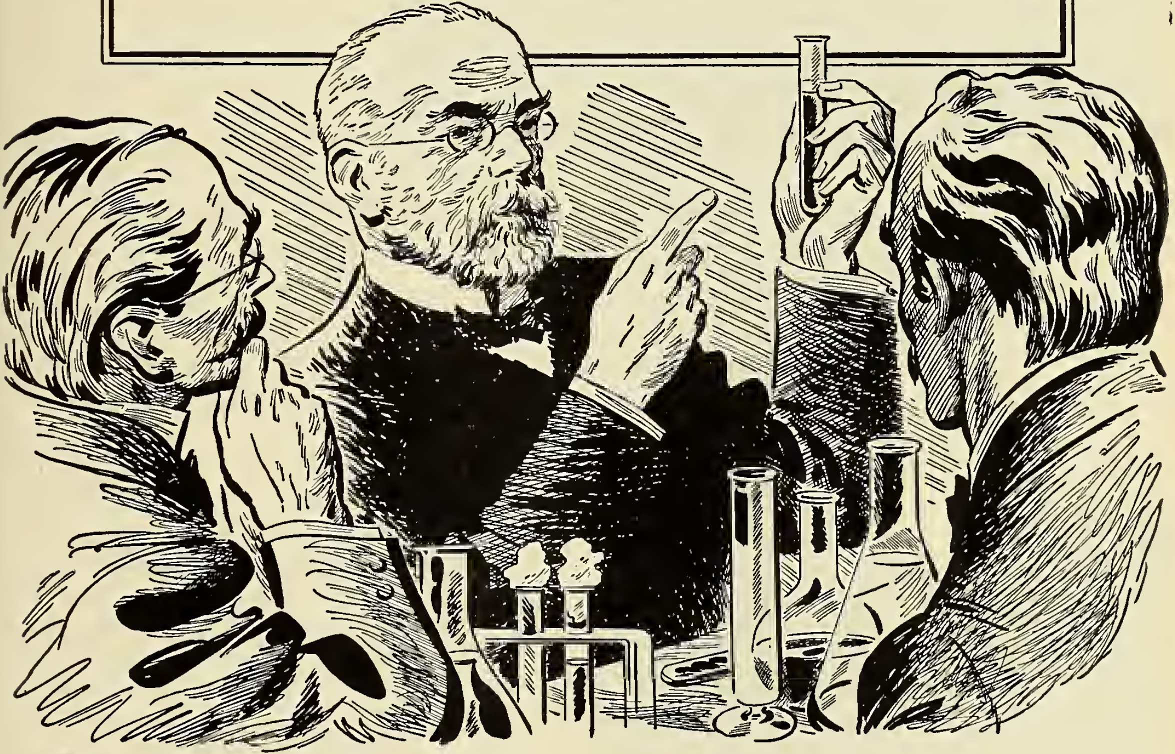
Experience is the Best Teacher

Robert Koch (*1843-1910*) **proved it in bacteriology...**

Koch showed in his postulates that he knew the value of experience: Specificity is demonstrated only when the microorganism (1) is present in all cases of the disease, (2) can be cultivated in pure culture, (3) produces the disease in susceptibles on inoculation, and (4) can be recultivated in pure culture.



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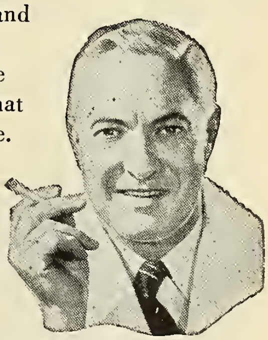
CHOICE QUALITY
TURKISH & DOMESTIC BLEND CIGARETTES

Yes, and experience is the best teacher in smoking too!

The wartime cigarette shortage was a real experience for smokers. Millions of people smoked whatever brand was available—more different brands than they might ordinarily have tried in years. And from that experience so many more smokers chose Camel as their cigarette that today more people are smoking Camels than ever before.

But, no matter how great the demand, we don't tamper with Camel quality. Only choice tobaccos, properly aged, and blended in the time-honored Camel way, are used in Camels.



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MORE DOCTORS SMOKE CAMELS

than any other cigarette

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A quiet, ethical hospital with therapeutic facilities for the diagnosis, care and treatment of Nervous and Medical cases. Invites coöperation of all reputable physicians who may supervise the treatment of their patients.

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EXCELLENT CARE TO CONVALESCENT AND CHRONIC PATIENTS

Rates Reasonable. Patients under the care of their own physicians, who direct the treatment.

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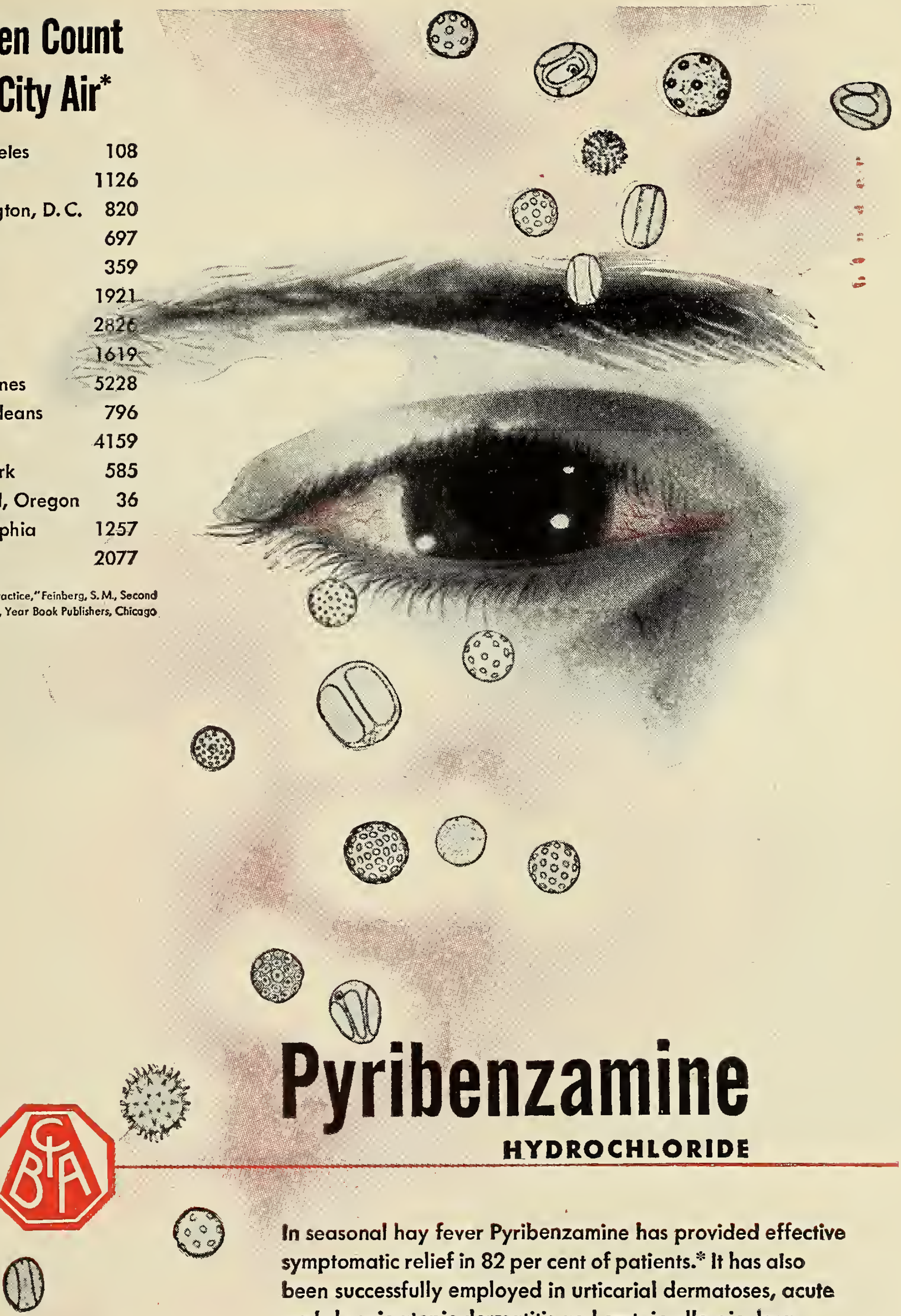
Pollen Count of City Air*

Los Angeles	108
Denver	1126
Washington, D. C.	820
Atlanta	697
Boston	359
Detroit	1921
St. Louis	2826
Chicago	1619
Des Moines	5228
New Orleans	796
Omaha	4159
New York	585
Portland, Oregon	36
Philadelphia	1257
Dallas	2077

*"Allergy in Practice," Feinberg, S. M., Second Edition: 1946, Year Book Publishers, Chicago



Pyribenzamine

HYDROCHLORIDE

In seasonal hay fever Pyribenzamine has provided effective symptomatic relief in 82 per cent of patients.* It has also been successfully employed in urticarial dermatoses, acute and chronic atopic dermatitis and certain allergic drug reactions. The comparatively low incidence of side effects permits adequate doses in cases where other antihistaminics have not been tolerated.

*Feinberg, J.A.M.A. 132:702, 1946

PYRIBENZAMINE ® (brand of tripelennamine)

For further information, write Professional Service Division

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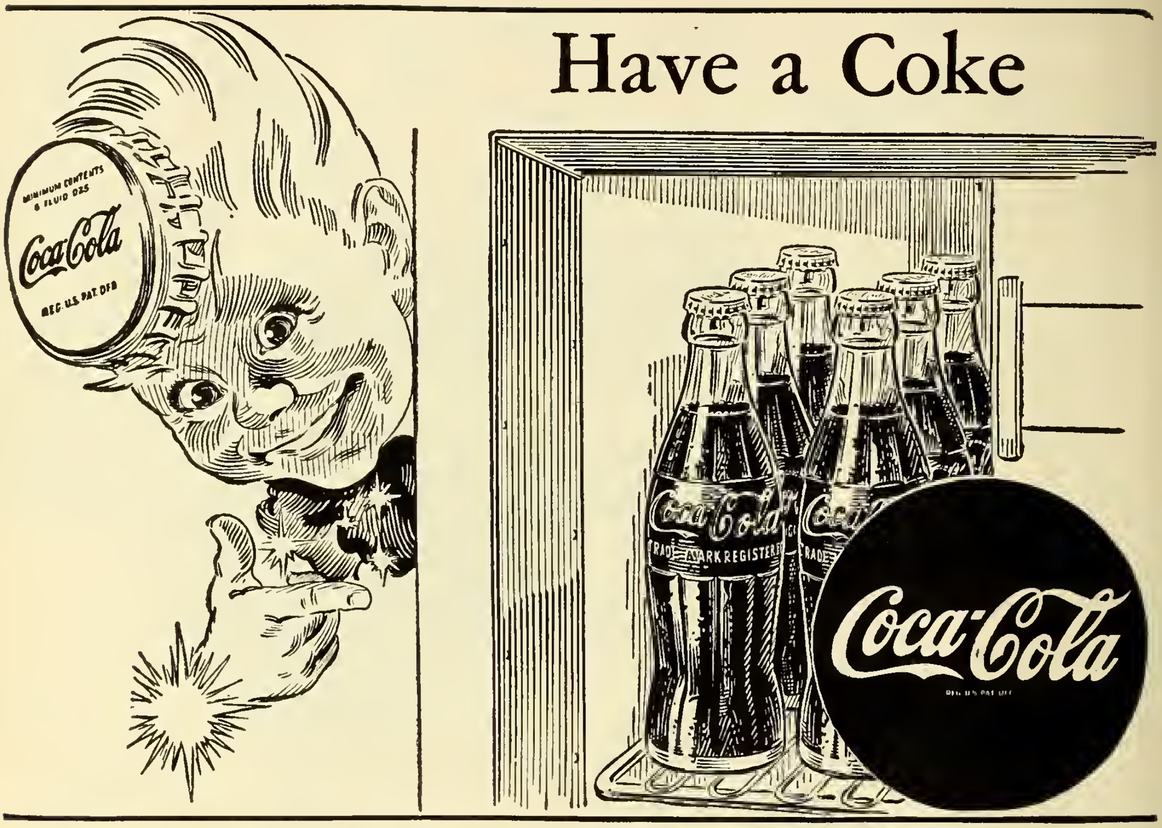
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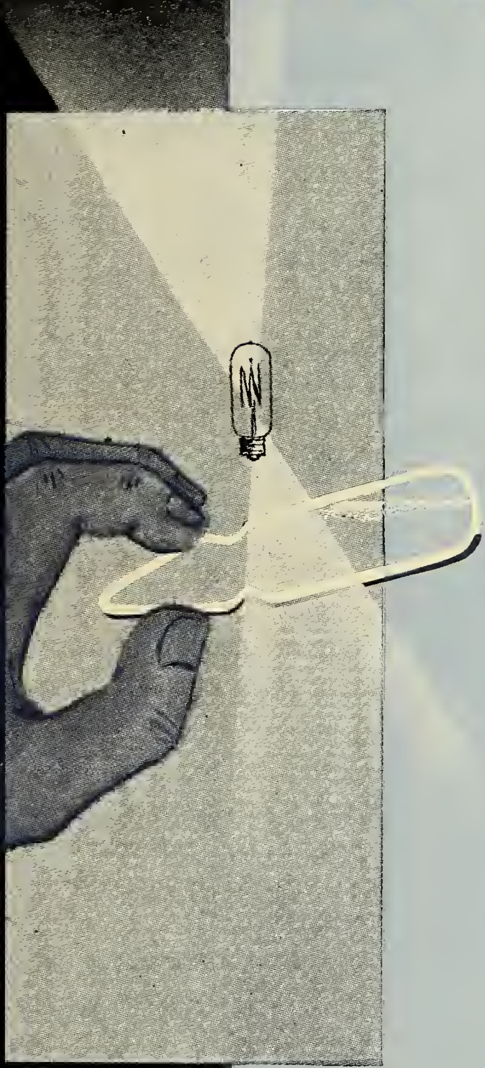

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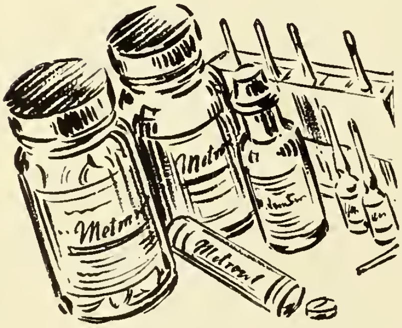

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 August, 1947 No. 8

"FOR MANNERS ARE NOT IDLE"

LOUIS A. BUIE, M.D.
Rochester, Minnesota

NOW in this time when all that is human tends to be regarded as something reprehensible, I, myself an erring mortal, have the temerity to come before you, an association of physicians, and to offer you, of all things, a panacea. Nevertheless, bear with me if you can, for what I hold forth is not a nostrum. It is nothing, in truth, so satisfyingly concrete as that. It is rather an abstraction, a matter of behavior, which, when sterling, has its source in the character of a man and only when counterfeit is buttered upon him.

Yet, out of my sadly incomplete knowledge of how the centuries have molded the convictions of men, I venture to say that down through the ages, this trait, this quality which I have in mind, has been accorded its place of importance. Otherwise, springing from the so-called Wisdom Movement of the Near East, there might not have been preserved in the Biblical Book of Proverbs, that which reads, "A soft answer turneth away wrath." Later, comparatively recently in fact, since it was in Elizabethan times, Shakespeare put into the mouth of no less than the Lord Chamberlain Polonius, his precepts to his son. Moreover, whatever people in general may think of Lord Chesterfield, and whatever Samuel Johnson did not think of him, men of this age occupy no height from which to look down upon him. And who can say that his preoccupation with how a man should gracefully bear himself with relation to his fellows had nothing to do with the distinguished political service he gave to his country, including what most administrators have found impossible, conciliation of the factions in Ireland? Again, Cardinal Newman, the author of "Lead, Kindly Light," whose life was almost coextensive with the nineteenth century, saw fit in his discourses "The Idea of a University" to introduce two well-known paragraphs with the sentence, "Hence it is that it is almost a definition of a gentleman to say he never inflicts pain."* And to come down to the present time, that century which was borne in on so high a tide of hope but wherein, man is now struggling for existence in a whirlpool of degradation: can it not be asked whether in this time hope could have been renewed if present political opponents of the United States had read or, having read had retained, a memory of the works of this great man?

Therefore I, in my imperfect attempt to follow after the great men whose thoughts I have just cited, ask your leave to consider, for a few moments, how we physicians, in the various roles we must assume in this modern day, perhaps can perform our tasks with greater ease and effectiveness than otherwise we could if, in a world which seems no longer to value consideration for others, we insist on conducting our affairs with good manners, with courtesy, with decorum.

Never in the history of our organization have those within it, and those outside it, needed the organization more. The association maintains its effectiveness. Yet these are times of stress. Stress

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Presidential address delivered at the Annual Banquet of the Minnesota State Medical Association, July 1, 1947, Hotel Duluth, Duluth, Minnesota.
From the Mayo Clinic, Rochester, Minnesota.

*Newman, John Henry: The Idea of a University, Discourse VIII.

engenders fatigue and fatigue, impatience. Out of impatience come altercation, enmity and the search, in unlikely places, for solutions of problems. Perhaps these are reasons why we physicians find great obstacles in our path as we set ourselves to the task of maintaining the standards of our work, or of elevating them. The nature of these obstacles is familiar to everyone here. Suffice it to say, there are modern institutions and organizations, and even large segments of our population whose interests we seek to defend, who face with skepticism and even with antagonism the proposals which we offer as solutions of perplexing problems.

Yet I believe that the people of the world not only are tired of struggle against hunger, illness and an uncertain future but that they also are tired of strife. If this is so, it is particularly desirable now for our association to function with harmony among its members as well as in its environment. To this end the physician must consciously deal gently with his colleagues and he must exercise extreme caution as he proceeds with plans for the benefit of those among whom he dwells. Very easily he can offend without intention. Among those who work for a living he is accorded, whether he wishes it or not, a slightly superior position. This he may accept but the assumption of a superior manner on his part will not be condoned, particularly by those of his neighbors whose knowledge of sociology and economics may be better than his. He will need constantly to employ his insight into human nature to get the other's point of view. From this exercise of his faculties, he will derive the habit of tolerance.

Certainly the physician will converse with many enlightened and competent individuals. Often they will entertain notions concerning medicine and the distribution of medical care which they will advocate with confidence and support with arguments which are satisfactory to themselves. Many times, to the physician, with his special knowledge of his own field, these arguments may seem worthy of contempt but he must not reject them with a contemptuous air. He must try to assume the objective position of an impartial inquirer and to seek some means whereby he may determine why, or even whether, his opponent is wrong.

Concerning some questions, the further he searches, the more he may become convinced that no answer is at hand and that some questions, if they do not transcend the limits of human understanding, may at least transcend its present resources. He cannot afford to permit himself to be discouraged by such experiences. He must be willing to take the time and to make the effort to clarify matters for others or to explain, fully and courteously, that knowledge which would allow him to answer the question under consideration is not as yet available.

Such an approach discourages strife and encourages amicable discussion. It is through discussion that experience is analyzed and eventually, we hope, correctly interpreted. I said "eventually" because often the correct interpretation is considerably delayed while men in a free society experiment and discuss. This freedom to try and to think and to express ourselves, probably most of us consider among our greatest strengths and greatest blessings. This freedom, which allows us to take our time, may render us a little tardy. Nevertheless it allows us to live up to the precept, "First of all, do no harm."

Now, if the foregoing advantages lead most physicians to the conviction that private enterprise brings the greatest good to the greatest number, well and good. Nevertheless, if there is a dissenter among us who believes that our concern for the public interest should lead us to accept a greater measure of public control, is he less our brother?

Surely there is one community enterprise which we can afford to strengthen, to revive or to inaugurate, depending on our belief as to the state which existed formerly. I refer to a more or less generally recognized moral standard which, it seems to me, used to have more force than it has now in guiding individual and corporate conduct.

It may seem that to treat of morals as a subtopic under good manners is to interchange the small for the great. But it is the fact that the two are related, not the order in which they are considered, which is important. Tennyson, who had considerable influence in forming our Anglo-American culture, expressed the relationship in words of which I took a part as the title of this address. He wrote,

> "For manners are not idle but the fruit
> Of loyal nature and of noble mind."

This is an age of science; an age of dangerous science; an age when science is about to outstrip all other activities. It is important to realize that science, unrestrained by moral precepts, can destroy man and all that he possesses and inhabits. Man must learn to live with man and he must know how to conduct himself in the presence of his own capacity for destruction.

It should be possible to evolve a system or a manner of living which, when guided by conscience and principles of ordinary decency, might be capable of developing proper human relationships. I insist that this can be done, given the proper human behavior. In each and every human being, if the soul has been lost, the soul must be re-created. A community soul must be reborn; a national conscience; a native American morality. These must be displayed to the world. At the same time, all must be prepared, with good grace, to accept change in all values, even these.

Knowledge is the product of great labor and great sacrifice but it is the advance of ideas by which progress ultimately is determined. Progress itself depends on change. Consequently, it is probable that in the march of ages many different creeds, apparently good creeds, which now exist, are destined to die out and to be succeeded by some which are better. The world has witnessed the beginning of some of them and there is no assurance that it will not see their end. All values which are essential to human progress must sustain the shock and the vicissitudes of time.

Moreover, if man adopted only the opinions of his forebears and contemporaries, he would create nothing new. The result would be an evident decay of that vigor of character and that audacity of conception and execution which paves the way to achievement. Our duty as physicians is clear. We shall freshen the fabric of our knowledge. We shall color anew its various parts and harmonize its apparent discrepancies. We shall employ every resource which we possess in an effort to determine what is best for all and, having arrived at a sound conclusion, we shall uphold it zealously, being assured that if it is true, ultimately it will prevail. In addition, we shall urge it with courtesy that it may more likely be adopted with willingness. Perhaps tolerance, maintained in an atmosphere of righteousness, persisting through change, may develop into esteem and that, in turn, may broaden into something resembling affection for our fellow men.

The safest and most impregnable ground on which social advancement can be founded is the universality of the affections. It is the bond of our common humanity; it is the golden link which joins together and preserves the human species. It is in the acts prompted by these affections that the existence of the highest instincts of our nature is revealed. Affection can warm the coldest temperament and soften the hardest heart. Regardless of how greatly the character of an individual may be deteriorated and debased, this spirit is capable of redeeming it. It is a godlike attribute.

The affections even transcend death and we feel, in the presence of death, that something remains—something which possibly the eye of reason cannot discern but which the eye of affection perceives. If this be a delusion, it is one which the affections themselves have created and we are forced to believe that the noblest and purest elements of our nature conspire to deceive us. Of all the moral sentiments which adorn and elevate the human character, the instinct of affection is one of the most vibrant and profound. It is the choicest of our possessions and bears upon itself the impression of truth. It is at once the condition and the consequence of our being. It flourishes best in an atmosphere of consideration and courtesy.

In fact, there are few fields of human endeavor wherein attention given to the feelings of others can be neglected safely. This applies even in the realm of practical politics, wherein we physicians have much to learn. We have been censured and justly so, for our failure to enter into community, state and national life. We have felt that for us to enter politics was scarcely consonant with the principles of medical ethics. We have looked with lack of esteem on many whose activities have been confined to political life and we would have to use stronger language to give our estimate of the lobbyist. Now it is necessary, however, that we alter our opinion concerning these matters.

I do not believe that human progress is chiefly owing to the wisdom of governments. Those who control government often are the creatures of the age in which they live and are not its creators. Often their accomplishments are the result of social progress and not the cause of it. Many times such men are the accidental and insufficient representatives of the spirit of their time. They may discern fallacies and may point out means to protect by presuming to raise themselves into positions as supreme judges of national interests. Great political reform or improvement often is not originated by such individuals but by bold and capable thinkers who are outside the governmental establishment. Persons of the latter type may discern fallacies and may point out means by which they can be remedied.

Thus, it is no longer advisable for the physician to confine his activities to the care of the infirm. Much of the progress which he may effect will depend on governmental action, energized not by others, but by himself. It is imperative now that the physician, with befitting dignity, assume his proper place beside those who determine the destiny of nations. We have a venerable precedent in the life of Dr. Benjamin Rush, signer of the Declaration of Independence. Since his time, a number of physicians have served effectively in political capacities.

If, in what I have said, my central thought has ever seemed too tenuous, perhaps I can bind all together by stating my basic conviction. I agree with that philosophy which holds that mankind is more virtuous than vicious and that good acts are of more frequent occurrence than bad acts. We know that cruelty is counteracted by benevolence. We know that sympathy is excited by suffering. We know that the injustice of some provokes the charity of others and we know that new evils are met by new remedies.

Accordingly, outstanding qualities of estimable men are these: gentleness and courage, boldness and prudence, tolerance, reverence, confidence, stability, humility, wisdom, patience and honesty. I believe not only that possession of these qualities engenders good manners but that the exercise of good manners furnishes proper soil for the cultivation of these qualities. The two elements working together, not alone, I believe, would do much to allay those twin dreads of the world today: fear and want.

Finally, we, in our profession, have been reared well. The code of ethics of our organization provides that "a physician shall be an upright man, instructed in the art of healing." Furthermore, he "must keep himself pure in character and conform to a high standard of morals and must be diligent and conscientious in his studies . . . conducting himself with propriety in his profession and in all actions of life." Perhaps no other group is in a more favorable position to exemplify the union of good manners and good faith.

CANCER APPROPRIATIONS

With the passage by Congress of legislation more than tripling appropriations for research and control of cancer, and bringing next year's budget of the National Cancer Institute in Bethesda, Md., to the all-time high of $14,000,000, the U. S. Public Health Service announces plans for an expanded attack on the cancer problem that will place cancer in the forefront of the Government's medical research and control programs.

Under the broad authority provided in Public Health Service Law and the Appropriation Act, support may now be extended to universities to assist them in developing greatly expanded cancer research and training programs. The law also supports the acquisition of land and construction of buildings when urgently needed. Evidence of the over-all desire on the part of the Congress and the President to provide continuity in cancer research is shown in a provision of the Act, under which funds for cancer research and training grants remain available until spent.

Already the National Advisory Cancer Council of the Institute has recommended greatly increased grants-in-aid to outside institutions engaged in experiments to find the cause and cure of cancer. With the passage of the Appropriations Act a total of forty-six project grants, involving the expenditure of $594,348, was made to widely scattered groups. In all, thirty-five institutions in twenty-three states are recipients. At the same time the Institute is greatly expanding its own research program at Bethesda, where there will be increased emphasis on clinical research.

Four million dollars of the increase in NCI's budget will go—not to research—but to cancer control, the program administered through the States to increase the effective use of present methods of diagnosing and treating cancer. It is estimated that while a fourth of cancer patients are cured today, another fourth could be cured if they received early treatment.

The cancer control program will place emphasis on the improvement of cancer detection, diagnostic and treatment facilities; the development of refresher courses for doctors; the establishment of adequate statistical services on cancer; and the setting up of cancer control units in State Health Departments.

POSTGRADUATE MEDICAL EDUCATION IN A PRIVATE HOSPITAL

ARTHUR H. WELLS, M.D.
Duluth, Minnesota

THE logical center for the continuation of medical education in a community is the hospital. There one can find an abundance of material and qualified teachers. National, state, and regional medical meetings, as well as short postgraduate training courses, should be considered indispensable adjuncts to the daily local teaching program. Furthermore, unless the hospital is the physician's most productive source of medical knowledge, then the doctor, his patients, and his community are missing something of inestimable importance. Determined steps can change a lethargic, procrastinating institution into a dynamic teaching center equivalent to that found in many medical schools. This goal has been reached in two private hospitals in this city of 100,000 population.

Any 200-bed or larger general hospital with a full-time clinical pathologist and roentgenologist has the basic essentials for the establishment and the continuous support of such a co-operative educational program. All that is necessary is the proper organization of: (1) the truly overwhelming amount of interesting subject matter in such an institution; and (2) the qualified, but frequently hidden, teaching talents of its medical staff.

The tried and proved teaching methods of medical schools are the key to success. Some of the basic rules include the following:

1. All departments and all staff members are expected to contribute their part to a well-rounded program.
2. Interns and residents present as much as 50 per cent of the teaching material.
3. Lectures, conferences, literature seminars, medical meetings, patients' chart reviews, demonstrations, et cetera, must be scheduled at least one month in advance.
4. Fixed weekly schedules are mandatory.
5. Someone who is intimately associated with the institution, its medical staff, and its patients, and who is willing to give whatever is necessary for success, must assume a leading role in arranging much of the program.
6. Participants must be notified three times: one month, one week, and one day in advance of their scheduled activity.
7. Insistence upon a thorough preparation and a good delivery is essential.
8. The material and methods of presentation must be varied and have a practical value.
9. As a rule, diagnostic and therapeutic problems should have been solved before presentation.
10. The limitation of teaching assignments to a few men is detrimental and is not to be tolerated.
11. The long range educational benefit to the participating physicians is the criterion for selection of subjects and speakers.
12. The frequent publication in medical journals of the material covered in the teaching program is highly desirable (Table I).

Adherence to these twelve rules results in a stimulation to greater effort, a spirited interest, a broader comprehension of medicine, and a warmer appreciation of one's colleagues.

The specific assignments of this hospital's educational program are arranged during the previous month to fit into an established weekly schedule (Table II). All staff members are sent the mimeographed monthly program (Table III) and are invited to all presentations, although certain items are primarily designed for interns and residents. On each of four days of the week, Tuesday through Friday, two one-hour medical subjects are scheduled. A third one-hour session in the form of a necropsy, with a co-ordinated study of the clinical aspects of the case, occurs on the average of almost every day of the week. These examinations are announced in advance by phone and on bulletin boards. On Tuesday (Table II) there is an 8:00 A.M. postgraduate medical conference (P.M.C.). In the afternoon the roentgenologist reviews selected films from the previous week's x-ray diagnostic problems (X-ray). On the first Tuesday of the month the Duluth Pediatric Society has its pediatric-pathologic conference (P.P.C.). A lecture (Lect.) is scheduled primarily for the interns and residents on Wednesday, and in the same evening they conduct an informal medical literature seminar (M.L.S.).

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

TABLE I. PUBLICATIONS EMANATING FROM EDUCATIONAL PROGRAM

1944

1. Toxemia of Pregnancy with Uterine Exsanguination
2. Congenital Fibrocystic Disease of Pancreas
3. Bilateral Cortical Necrosis of Kidneys
4. Atheromatous Plaque of Renal Artery with Hypertension
5. Bilateral Adrenal Hemorrhages with Waterhouse-Friderichsen Syndrome
6. Failure of Surgical Wound Healing Due to Talc
7. Actinomycosis of the Urinary Bladder Complicating Madura Foot
8. Malignant Hepatoma in an Infant
9. The Minnesota Coroner System
10. Duodenal Obstruction by Superior Mesenteric Artery Pressure
11. Volvulus in the Newborn
12. Acute Sulfonamide Myocarditis

1945

1. Rh Tranfusion Reaction and Transfusion Reaction Instructions
2. Epidermolysis Bullosa in a Newborn
3. Congenital Anal Stenosis
4. Congenital Interauricular Septal Defect
5. Renal Rickets
6. Parenteral Fluid Therapy
7. Punch Biopsy of the Liver
8. Chronic Peptic Ulcer of the Esophagus
9. Congenital Atresia of the Biliary Tract
10. Isolated Myocarditis, Probably of Sulfonamide Origin
11. Cardiac Amyloidosis with Chronic Congestive Heart Failure in Multiple Myeloma
12. The Nature of Cancer
13. Adrenal Hemorrhage of the Newborn

1946

1. Cancer Detection Centers and Allied Cancer Projects
2. Chronic Intradural Hematoma
3. Cancer Research—A Preface
4. Diptheria: A Report of Six Deaths
5. Pulmonary Emphysema
6. Hormonal Dyscrasias of the Breast
7. Periarteritis Nodosa
8. Cancer Research
9. Normal Appendices in 1000 Appendectomies
10. Practical Application of New Developments in Blood Groups and Types
11. Blood Types in Pregnancy (Questions and Answers)
12. Air Embolism

TABLE II. BASIC WEEKLY SCHEDULE

	Tuesday		Wednesday		Thursday		Friday	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
First week	P.M.C.	P.P.C.	Lect.	M.L.S.	Lect.	St.M.S.	St.M.C.	M.Chart
Second week	P.M.C.	X-ray	Lect.	M.L.S.	Lect.	St.L.Co.	St.M.C.	S.Chart
Third week	P.M.C.	X-ray	Lect.	M.L.S.	Lect.	St.L.S.	St.M.C.	P.Chart
Fourth week	P.M.C.	X-ray	Lect.	M.L.S.	Lect.	D.S.S.	St.M.C.	O.Chart

Key: P.M.C.=Postgraduate Medical Conference. P.P.C.=Pediatric Pathologic Conference. Lect.=Lecture. M.L.S.=Medical Literature Review. St.M.S.=St. Mary's Hospital Monthly Staff Meeting. St.L.Co.=St. Louis County Monthly Meeting. St.L.S.=St. Luke's Hospital Monthly Staff Meeting. D.S.S.=Duluth Surgical Society Monthly Meeting. St.M.C.=St. Mary's Hospital Pathologic Conference. M.Chart=Medical Chart Review. S.Chart=Surgical Chart Review. P.Chart=Pediatric Chart Review. O.Chart=Obstetric Chart Review.

On Thursday there is a second weekly lecture. The regular monthly medical meetings occur on Thursday evenings, including those of the staffs of the two larger hospitals (St.M.S. and St.L.S.), the county medical society (St.L.C.) and the Duluth Surgical Society (D.S.S.). A second weekly postgraduate medical conference is conducted on Friday in the collaborating neighboring institution, St. Mary's Hospital (St.M.C.). On the same day the chiefs or assistants in the various departments of medicine (M.Chart), surgery (S.Chart), pediatrics (P.Chart), and obstetrics (O.Chart) conduct a review before the interns and residents of selected charts of patients discharged from the respective departments during the preceding thirty days.

The two weekly postgraduate medical conferences play a more important role in medical education of our physicians and interns than do the regular monthly medical meetings. They are conducted in a manner similar to that of the clinical pathologic conferences of other medical institutions, except that a much wider variety of subjects is covered. An attempt is made to include all practical aspects of the field of medicine, with frequent variations of the subject matter and method of presentation. The principal sources of material include the following: postmortem examinations, living patient case studies and demonstrations, out-of-town medical meetings, outstanding articles from the medical literature, recent advances in special fields, reviews of selected topics in the basic sciences or clinical medicine, clinical experimental studies, and collective case reviews. All serious diagnostic and therapeutic mistakes are routinely discussed with complete frankness. Even the pathologist admits his mistakes.

Approximately 100 lectures (Table IV) delivered by forty-five physicians are scheduled for delivery to the house staff during the year. These informal talks are designed to prepare the students for the practical application of medicine in general practice. The subjects have at times been selected with the talent of the teacher in mind. They may not cover the entire field of the general practitioner; however, upon the request of the

(Continued on Page 848)

TABLE III. POSTGRADUATE MEDICAL EDUCATIONAL PROGRAM
(Month of February, 1947. Fifty subjects, fifty-three participants)

February		
4.	St. Luke's Postgraduate Medical Conference	
	1. Heparin and Dicoumarol	Dr. R. H. Wasserburger*
	2. Phlebothrombosis Case Study	Dr. E. C. Bagley Dr. R. H. Wasserburger*
	3. Diagnostic Case Study	Dr. F. H. Dickinson, Jr. Dr. M. S. Munson*
	Pediatric-Pathologic Conference	
	1. Foreign Body in Bronchus	Dr. R. P. Buckley
	2. A Diagnostic Study	Dr. E. E. Barrett
	3. A Diagnostic Case Study	Dr. R. P. Buckley
	4. A Monstrosity (demonstration)	Dr. H. A. Sincock
5.	Injuries of Hand	Dr. G. C. MacRae
	Medical Literature Review	Dr. L. F. Grams*
6.	Medical Legal Topics	Mr. John Fee
	St. Mary's Staff Meeting	
	1. Presentation of Plaque Honoring Dr. Malcolm T. MacEachern	
	2. Presentation of Scroll Honoring Dr. E. L. Tuohy	
	3. Hospital and Nursing Falicities in Brazil	Sister Olivia, O.S.B.
7.	St. Mary's Pathologic Conference	
	1. Pathology of Stomach	
	(1) Case Study	Dr. John Mayne* Dr. P. S. Rudie
	(2) Case Study	Dr. R. D. Workman* Dr. M. G. Gillespie
	2. Physiological Problems	Dr. E. L. Tuohy
	Review of Medical Patient Charts	Dr. F. J. Hirschboeck
11.	St. Luke's Postgraduate Medical Conference	
	1. Toxemia of Pregnancy and Hypertension	Dr. E. Zupanc*
	2. Acute Uremia and Peritoneal Irrigation (Case Report)	Dr. W. H. Pollard
	3. Classification of Skin Tumors	Dr. M. G. Fredricks
	X-ray Review	Dr. A. L. Abrahams
12.	Prenatal Care	Dr. R. J. Eckman
	Medical Literature Review	Dr. R. J. Goldish*
13.	Abortions, Premature Labor, Hemorrhage	Dr. E. C. Bagley
	St. Louis County Medical Society Meeting	
	1. Treatment of Syphilis	Dr. F. T. Becker
	2. Treatment of Gonorrhea	Dr. W. E. Hatch
	3. Reiter's Disease	Dr. O. E. Sarff
14.	St. Mary's Pathologic Conference	
	1. Acute Abdominal Conditions	
	(1) Case Study	Dr. Joseph Seitz* Dr. A. J. Spang Dr. W. V. Knoll
	(2) Case Study	Dr. W. C. Martin Dr. A. J. Bianco
	Review of Surgical Charts	Dr. P. S. Rudie
18.	St. Luke's Postgraduate Medical Conference	
	1. Dyspepsia, Ulcer, and Gastric Cancer	Dr. R. A. MacDonald*
	2. Diagnostic Case Study	Dr. C. H. Mead Dr. H. M. St. Cyr*
	X-ray Review	Dr. A. L. Abrahams
19.	Hospital Literature Review	Dr. R. H. Wasserburger* Dr. H. M. St. Cyr*
20.	The puerperium	Dr. J. R. Manley
	St. Luke's Staff Meeting	
	1. Report of Proceedings of American Academy of Orthopedic Surgeons	Dr. M. H. Tibbetts Dr. R. J. Dittrich Dr. S. S. Houkom
	2. Oxygen Therapy	Dr. F. J. Jacobson
21.	St. Mary's Pathologic Conference	
	1. Acute Intestinal Obstruction	
	(1) Case Study	Dr. John Bartness* Dr. G. C. MacRae
	(2) Case Study	Dr. John Mayne* Dr. A. J. Bianco
	2. Caloric Requirement of the Working Man	Dr. E. L. Tuohy
	Review of Pediatrics Charts	Dr. R. E. Nutting
25.	St. Luke's Postgraduate Medical Conference	
	Obstetrics and Gynecology Conference	
	1. Obstetrics and Gynecology Service Review	Dr. E. E. Hunner*
	2. Identical Twins	Dr. R. J. Goldish*
	3. Hormonal Therapy at Menopause	Dr. M. O. Wallace
	X-ray Review	Dr. A. L. Abrahams
26.	Pharmacology in Obstetrics	Dr. F. H. Magney
	Medical Literature Review	Dr. J. P. Tetlie*
27.	Operative Obstetrics—Forceps and Their Use	Dr. A. O. Swenson
	Duluth Surgical Society Meeting	
	1. Sarcoma of the Breast	Dr. W. A. Conventry
	2. Pyometra	Dr. E. C. Bagley
	3. Sarcoma of the Stomach	Dr. Clarence Jacobson
28.	St. Mary's Pathologic Conference	
	1. Ocular Tuberculosis	Dr. F. N. Knapp Dr. D. W. Wheeler
	2. Case for Diagnosis	Dr. Joseph Seitz Dr. Henry Fisketti

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*Interns and residents

interns or residents, any additional subjects are scheduled.

Other factors of importance in the postgraduate training of the hospital medical staff members are: (1) an informed and progressive hospital board of directors whose members constantly anticipate the rapid advances in medical science and appreciate fully the importance of continuous collaboration with the medical staff; (2) a community which has been educated over a long period by its physicians as to the value of postmortem examinations; (3) a flat rate fee for laboratory tests based upon the time spent in the hospital and not upon the amount of work performed, thus permitting the equivalent of medical school laboratory studies without financially burdening the patient; (4) the aid of a full-time medical anesthesiologist; (5) a medical library of adequate size; (6) a well-balanced, rotating internship; (7) properly supervised residencies; (8) a guarded minimum of laboratory, blood bank, and parenteral fluid routine duties for interns, with specially trained technicians and nurses performing the bulk of these tasks; (9) a maximum of 700 hospital admissions per intern per year; and ten of the greatest importance, a congenial medical staff alerted to the mutual benefit derived from a continuous effort at personally teaching and entertaining interns and collaborating with medical colleagues in all of the details of maintaining a high standard of medical practice in the community.

TABLE IV. HOUSE STAFF LECTURES

Practical Therapeutics (2)
Medical Ethics and the Harrison Act
Pharmacology in Obstetrics
Cardiac Diseases in Practice (2)
Orthopedic Apparatus and Application
Back Pain
Fractures (5)
Thoracic Surgery
Management of Dystocia
The Puerperium
Eye Conditions and General Practitioner
Otitis Media and Mastoiditis
Bookkeeping, Collections, Taxes for Physicians
Anal and Rectal Diseases
General Practitioner's Bag
Diabetes Mellitus (2)
Peptic Ulcer
Colon Diseases
Esophageal Diseases
Dermatology for General Practitioner (2)
Office Gynecology
Version
Brow, Face, etc., Presentations
Caesarean Sections
Toxemias of Pregnancy
Feeding Infants
Ciliary Action of Upper Respiratory Tract
Immunization
Electroencephalography
The Newborn Infant
Neurologic Examination
Brain Tumor and Abscess
Spinal Fluid Examination
Liver Function Tests
Rh Factor
Anemias
Pulmonary Tuberculosis
Psychoneuroses (2)
Allergy
Medical Economics
Burns
Neck Surgery
Thyroid
Electrocardiogram (6)
Coma
Pulmonary Diseases
Surgical Technique
Pre- and Postoperative Care (2)
Minor Surgery (2)
Hernia
Feet
Evaluation of Disability
Cardiac Murmurs
Hypertensive Disease (2)
Arrhythmias
Pre- and Postnatal Care
Contraction of Pelvis
Uses of X-ray in Obstetrics
Tumors of the Hand
Injuries of the Hand (2)
Decidual and Placental Clinical Pathology
Country Practice
Medical Legal Topics
Chronic Alcoholism
Urogenital Diseases
Abortions
Prenatal Care
Biologic Hormones (2)
Forceps and Their Use
Breech Extraction
Manikin Exercises
Caldwell-Malloy Films and Technique
Analgesics and Premedication Before Delivery
Anesthetics Used in Obstetrics
Physiotherapy

The great majority of private hospitals of this country are deficient in their medical educational program. Inasmuch as this may be due to the lack of realization of its advantages and feasibility of attainment or a need of methods and rules of procedure, an ideal postgraduate teaching center for both private practitioners and resident physicians has been briefly described.

WATER-BORNE TULAREMIA

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THE clinical recognition of tularemia and the expanding reservoirs of infection for man among the warm-blooded animals have been reported more frequently. The clarification and recognition of clinical states of the disease, including the important pleuropulmonary manifestations, have resulted in an entity considerably enlarged from its original description[13] in 1911. With the evident specificity of streptomycin in its treatment the clinical cycle appears to have been completed.

The reported sources of infection for man, however, appear to be increasing. Francis[6] in 1937 noted over twenty animal and insect sources, although the cottontail rabbit, jack rabbit and snowshoe hare alone were implicated in over 90 per cent of human cases in the United States. Additional reports since that time have described transmission of the disease to man by the pheasant, grouse, horned owl, chicken hawk, beaver, raccoon, dog, fox, squirrel, and snapping turtle. Burroughs[4] in 1945, listed all known naturally infected vertebrates, including five bird species and twenty-three mammalia in the United States and six in Canada. The latter area included species of ground squirrels, mice, rabbits, and the gull. The evidence of the large animal reservoir of infection is impressive. Infection in man, in most instances, occurred through infected tick, flea or other insect bites, or direct contact with the tissues of infected animals. Transmission from animal to animal and from animal to man is known, but no instance of transmission from man to man has been reported.

Human infection through the handling of cold-blooded animals has been described as incurred in the skinning of a bull snake,[6] and Miller[11] described infection from the fin prick of a catfish caught in a small Kansas river, resulting in a small wound on the palm of the left hand, with onset of symptoms five days later. Rabbits with so-called "rabit fever" had been seen to fall into the river and drown and numerous rabbit carcasses were noted in the water. No other similar instances are noted in the literature, although infection from fish caught with infected rabbit meat as bait is reported. It is not assumed that reptiles or fish present reservoirs of infection, but rather are the inadvertent sources of trauma to the skin allowing entry of the organism from the contaminated body surfaces.

Water-borne infection, presumably from contamination with animals, dead or alive, has been recognized. About 1,000 cases of tularemia reported from Russia in 1928 resulted from the skinning of water rats for their pelts. Karpoff and Antonoff[9] in 1936 reported forty-three cases from Russia in natives who drank unboiled water from a brook thought to have been contaminated by water rats. The presence of the organisms in the water course was proved experimentally and bacteriologically, as 100 per cent of guinea pigs infected with the water died, and cultures of P. tularense were obtained from their organs. The stream was not stagnant, but it was noted to have been good flowing water of shallow depth.

Parker[12] reported tularemic infection in Montana streams and Jellison[8] subsequently reported infection in beaver in that state with coincidental contamination of stream water. The association of stream infection with epizootics occasionally observed in beavers was suggested. The dangers of infection from run-off water from rain and melting snow contaminated with animal carcasses and later stored in reservoirs for animal and human use are emphasized by Bow and Brown[3] as possible sources of water-borne tularemia in Western Canada.

A case of tularemia due to infection while cleaning fish, with successful treatment with streptomycin, is reported.

P. V., aged thirty-nine, white, male, caretaker of a tourist camp, and resident of a southern Minnesota town, was admitted on September 3, 1946. On August 27 the patient experienced the onset of malaise, slight nausea, fever and profuse perspiration, followed by shaking chills during the next two days. He was admitted to a local hospital on August 29 with continued symptoms and fever of 101-103° F. Atabrine, penicillin and several blood transfusions were given without benefit, and he was subsequently transferred to this hospital.

Examination revealed a well-developed and well-nourished white man, perspiring profusely and appear-

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From the Department of Medicine, University of Minnesota, and Veterans Administration Hospital, Minneapolis, Minnesota.

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ing acutely ill, with temperature of 100° F. Positive findings were confined to the left upper extremity. An irregular deep ulcer with fairly sharp edges and purulent, necrotic base was noted on the dorsal aspect of the left thumb overlying the interphalangeal joint, with moderate redness and slight edema of the immediately surrounding skin. On the dorsal aspect of distal phalanx, left little finger, was a small, rounded, crusted, healing ulceration. Moderate enlargement and tenderness of the left axillary nodes and a few slightly enlarged right axillary nodes were palpable.

Laboratory studies: Hemoglobin 17.7 Gms., red blood count 4,350,000, white blood count 6,400 with 50 per cent neutrophils, 45 per cent lymphocytes, 5 per cent monocytes. Urinalysis, blood Wassermann and repeated malaria smears were negative. Sedimentation rate (Westergren) 46 mm./hr. Admission chest radiograph was negative.

Careful questioning on many occasions failed to reveal any history of the handling of live or dead game or other animals. There was no history of tick bite. He never hunted, but did fish almost daily for carp and catfish in the Minnesota River. He recalled scratching the dorsum of the left thumb while cleaning fish sometime during a two-week period prior to onset of his illness, with the appearance of infection and ulceration with concomitant pain and enlargement of left axilliary nodes several days prior to August 27. A small infected, ulcerated area appeared on the left little finger at about the same time.

Agglutinations for B. abortus and typhoid-paratyphoid were negative on admission and remained negative. P. tularense agglutination on September 7 was 1:80, with cross agglutination of Proteus OX 19 to 1:160. Cultures from the ulcers on the left hand revealed hemolytic Staphylococcus aureus. Cultures of material from the ulcers and blood cultures on cystine media produced no growth.

Symptoms remained unchanged, with profuse perspiration as the most prominent complaint. Temperature became normal on September 5, then rose sharply to 103.8° F. on September 6, with a subsequent daily spiking fever of 101.4° to 104° F. Intramuscular penicillin, 40,000 units every three hours, was given from September 7 to 12 without response. The lesion on the left thumb healed rapidly after application of hot, moist compresses followed by 5 per cent sulfathiazole ointment, with gradual subsidence of axillary lymphadenopathy.

On September 8 a small patch of crepitant râles was heard at the left lung base and chest radiograph revealed a diffuse pneumonitis at the left base and to a lesser degree in the right upper lobe. Cold agglutinin titres were negative. Tularemia was considered the most likely diagnosis at this time and streptomycin was requested for therapy. P. tularense agglutination titre repeated on September 13 had risen to 1:2560.

Streptomycin therapy, 0.2 grams intramuscularly every three hours, was begun on September 13 and continued until September 20, the patient receiving a total of 9.9 grams. Subjective improvement with subsidence of the profuse diaphoresis was noted by the patient on the second day of treatment. Temperature became normal on September 17 and remained normal subsequently.

On September 22 there was an episode of severe pain in the left chest, exacerbated by respiration, relieved by strapping and sedation. Chest film revealed no extension of the pneumonitis, there were no abnormal physical findings and the temperature remained normal. The symptoms were attributed to pleuritis, and subsided slowly over a period of ten days. Electrocardiogram on September 23 was normal. No evidence of pleural effusion was noted at any time, and final chest radiograph on October 7 showed only minimal residuals of the pneumonic consolidations and complete resolution of all infiltrative lesions.

The highest titre of P. tularense agglutination on September 17 was 1:1280, on September 27, 1:640, and on October 5, 1:1280. Sedimentation rate on October 11 was 27 mm./hr. The white blood count ranged between 6000 and 9000, with moderate lymphocytosis.

At the time of discharge on October 15, 1946, the patient was ambulant, asymptomatic and without positive physical findings.

This case of tularemia, with cutaneous and pulmonary infection, responded rapidly and effectively to treatment with streptomycin. The mortality in pleuropulmonary tularemia has previously been reported[2] as from 30-60 per cent. Stuart and Pullen[14] reported 268 cases from the literature with a mortality of 39.9 per cent. Hunt[7] recently reported twelve cases treated with an average of 0.5 grams streptomycin daily with one death occurring in a case with cerebral manifestations. He recommends a therapeutic trial of the antibiotic for several days in cases of severe pneumonia of undetermined origin in areas of endemic tularemia, since waiting for confirmatory laboratory studies, in some cases, may endanger lives. Recommended dosage at the time our case was treated was higher than that now recommended by the National Research Council,[10] the present suggested dosage being 0.5 to 1.0 grams daily for five to seven days.

The resurgence of hunting and fishing following the recent war years, especially in the upper Midwest, suggests the possibility of increasing exposure and infection. The relatively wide variety of infected game birds and animals and the possibility of contamination of fishing waters should be adequately recognized. The ingestion of improperly sterilized water from such sources may also be of significance, as the oral portal of infection from water has been previously noted. Amoss and others[1,14] have also reported cases due to the ingestion of partially cooked rabbit meat.

Summary

A second case of tularemia incurred during the handling of fish, in which the source of infection was undoubtedly water borne, is presented, together with some comment on the possibilities of other human infection from this source.

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(Continued on Page 880)

INFECTION OF THE NECK AFTER TONSILLECTOMY

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FORTUNATELY, infection of the neck after tonsillectomy is not a common occurrence among the large number of tonsillectomies performed. However, when such infection does occur it is dangerous and demands prompt, rational treatment.

Infections of the neck may be represented by cervical adenitis, cellulitis of the neck, infection of a fascial space, thrombophlebitis and septicemia or any combination of these conditions.

Etiology and Prophylaxis

Obviously infection of the neck after tonsillectomy results from invasion of one of the cervical structures by pathogenic bacteria. The avenue of entrance of such bacteria into the neck cannot be determined definitely. Certain conditions already present in the patient's throat and trauma incident to surgery may predispose to postoperative infection. The presence of an active infection of the throat or a common cold may predispose to infection of the neck after tonsillectomy. Injury to the superior constrictor muscle, which lies between the tonsil and the pharyngomaxillary space, conceivably may predispose to infection of this space. Undue trauma incident to performance of tonsillectomy, especially that caused by dissection of the lower pole of the tonsil from its rather firm attachment to the superior constrictor muscle, may produce an avenue of infection to the pharyngomaxillary space.

In introducing a local anesthetic agent great care should be employed to direct the needle properly, especially in the region of the lower pole of the tonsil, wherein deep insertion of the needle might readily cause penetration of the superior constrictor muscle. At the lower pole, the needle should be directed into the plica in a direction horizontal to the palatoglossal muscle in order to avoid penetration of the superior constrictor muscle. All injections about the tonsil should be made into the plane which lies between the tonsillar capsule and the aponeurosis of the superior constrictor muscle; the needle should be felt to move freely in this plane. The use of unsterile equipment in administration of injections obviously may lead to infection of the neck.

Occasionally the styloid process produces a convexity or "tenting effect" in the otherwise concave tonsillar fossa; if this condition is not recognized, undue trauma to the tonsillar fossa may result from operation. Obviously, if careful dissection is done, injury to the tonsillar fossa should not occur.

From a bacteriologic standpoint, the virulence of the invading organism is undoubtedly of great importance. In 1939 New and Erich[2] reviewed the articles which had appeared in English during the previous five years on the subject of infections of the neck. In summarizing the results of the bacteriologic studies that had been recorded these authors made the following statement: "It would appear that many types and strains of organisms will produce cervical abscess or cellulitis under favorable conditions. Most frequently encountered in such suppurative conditions is the hemolytic streptococcus. In many cases the Borrelia vincentii plays a prominent role. Only infrequently are such organisms as staphylococci, non-hemolytic streptococci, and pneumococci the primary cause of the inflammatory process, although they occur commonly in the mixed type of infections."

Such diseases as diabetes, chronic nephritis or other severe constitutional diseases, although they may not actually predispose to infection of the neck, certainly make the patient less resistant once infection has developed.

Anatomic Considerations

From a pathologic standpoint knowledge of the anatomy of the neck, especially that of the fascial planes, is important. It is especially important that every practitioner of otolaryngology be familiar with the pharyngomaxillary space, which lies very near the tonsil. To understand better the importance of this space one must be familiar with the anatomy of the deep cervical fascia. This fascia lies beneath the platysma muscle and invests the neck. It also forms sheaths for the carotid vessels and for structures in front of the vertebral

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column. The investing layer of deep cervical fascia is attached posteriorly to the ligamentum nuchae and to the spinous process of the seventh cervical vertebra. As it passes around the neck, the fascia invests the trapezius and sternocleidomastoid muscles. In the posterior triangle of the neck the fascia is a rather loose areolar tissue, while in the anterior triangle it forms a single fascial lamella which continues anteriorly to the midline to join with its fellow of the opposite side. In the midline of the neck anteriorly the fascia is attached to the hyoid bone and the symphysis mandibulae.

Above, the fascia is attached to the superior nuchal line, to the mastoid process and to the inferior border of the mandible throughout its length. It ensheathes the parotid gland and extends upward to attach to the zygomatic arch. The part that passes medial to the parotid forms a strong band known as the stylomandibular ligament.

Below, the fascia is attached to the acromion, the clavicle and the manubrium. Above the manubrium it splits into two layers to form the suprasternal space (Burns' space).

The fascia which covers the deep surface of the sternocleidomastoid muscle gives off several processes which form the sheath of the omohyoid muscle, the carotid sheath and the prevertebral, buccopharyngeal and pretracheal layers of fascia.

The prevertebral fascia is fixed to the skull above and continues into the thorax below. The buccopharyngeal fascia ensheathes the constrictor muscles of the pharynx and is carried superiorly onto the buccinator muscle; it is separated from the prevertebral fascia by loose areolar tissue to form a space known as the retropharyngeal space.

The pretracheal fascia ensheathes the thyroid gland. It is fixed above to the hyoid bone and is extended below beyond the root of the neck to fuse with the pericardium. It also fuses on either side with the prevertebral fascia to form a compartment for the thyroid gland, trachea, larynx, pharynx and esophagus.

It should be understood that the pharyngomaxillary space in the normal neck is merely a potential space and that only as a result of the formation of an abscess within it or of the introduction of the dissector's finger or instrument into it does this potential space become an actual space or compartment.

The pharyngomaxillary space is pyramidal in shape; its base is the skull and its apex is at the greater cornu of the hyoid bone. The lateral boundary consists of the parotid space and fascia. The internal pterygoid muscle and the ascending ramus of the mandible form the anterior boundary. The superior constrictor muscle separates the pharyngomaxillary space from the tonsil and provides the medial boundary of this space. Posteriorly the space is bounded by the stylopharyngeal aponeurosis which covers the great vessels of the neck.

Signs and Symptoms

Deep infections of the neck frequently have an insidious onset, although those which follow tonsillectomy may have a rapid onset. The temperature rises daily to peaks, then may level off and gradually fall. Chills and sweats commonly occur. Various degrees of toxemia may exist. Dysphagia and dyspnea may be present. The patient complains of pain in the throat and neck. At examination, some evidence of tenderness can be elicited. In infections of the pharyngomaxillary space trismus, swelling in the region of the parotid gland and displacement of the tonsillar fossa and the palate occur. The patient who has infection of the pharyngomaxillary space should be observed closely for symptoms and signs of phlebitis.

Treatment

There are two schools of thought in respect to treatment of deep infections of the neck: those of one school favor early opening of the lesion, while those of the other favor the relatively conservative practice of waiting for appearance of signs of fluctuation or of localization of the infection before institution of drainage. Use of hot packs and irradiation may prove beneficial. The sulfonamide drugs and penicillin are valuable in combating infections caused by organisms which are sensitive to the action of these therapeutic agents. General supportive measures should be instituted. If dysphagia is severe a feeding tube should be inserted. Should involvement of certain structures cause dyspnea, tracheotomy should be performed. The value of blood transfusions should not be forgotten.

Incision for opening an infected pharyngomaxillary space is made from below and behind the angle of the mandible forward on a line toward the hyoid bone. The T incision of Mosher[1] may also be used. After the superficial structures have been separated, the finger is inserted in the space between the parotid and submaxillary salivary glands medial to the mandible and pushed along the inner aspect of the internal pterygoid muscle into the pharyngomaxillary space. A large rubber-dam type of drain should be inserted deeply into the space and a suitable dressing applied.

If thrombophlebitis of the internal jugular vein has taken place the incision should be extended down over the course of the vein so that adequate exposure of the vessel may be secured to permit treatment of this complication.

Reports of two cases follow. One case is that of an uncomplicated infection of the pharyngomaxillary space which followed tonsillectomy; the other is that of an infection of the pharyngomaxillary space complicated by the occurrence of thrombophlebitis and the presence of frank pus in the internal jugular vein.

Report of Cases

Case 1.—A white woman, aged twenty-three years, entered the hospital on August 14, 1946. She stated that tonsillectomy had been done two weeks previously and that the right side of her throat had remained sore ever since. The patient complained of headache and attacks of nausea, vomiting and dizziness; she said that in the last three days before admission to the hospital she had noticed, in the right upper cervical region, swelling which extended up to the cheek. She stated that she had received penicillin for one week previous to admission. A culture taken elsewhere was said to have revealed streptococci.

The patient was given both penicillin and sulfadiazine for five days; then administration of sulfadiazine was stopped and use of penicillin alone was continued for another five days. The amount of penicillin given during the course of treatment was 1,420,000 units. After the third day the patient showed marked improvement and only very slight induration remained in the superior cervical region. The induration seemed to clear up shortly thereafter. At no time was there fever of the spiking type. It was only during the first three days of treatment that she had fever at all. The highest temperature recorded was 100.6° F.; this occurred on the second day after admission.

After hospitalization for ten days the patient was dismissed. She got along well for three days, after which she again noted pain in the right side of the throat and had difficulty opening her mouth. She returned one week after dismissal. It was difficult to examine the throat because the patient was unable to open her mouth satisfactorily. Induration was present in the right submandibular region. Again the patient was given penicillin; over a period of eight days 1,040,000 units were administered. Again symptoms disappeared. A small abscess at the upper pole of the right tonsillar fossa was opened and the patient was dismissed from the hospital eight days after admission. At no time during this second period of hospitalization was there fever.

Six days after the second dismissal the patient entered the hospital for the third time. Marked swelling of the right upper cervical region and cheek was present. The patient was again given penicillin. The temperature varied between normal and 99.8° F. Two days after admission an incision was made below the angle of the jaw and an abscess in the pharyngomaxillary space was drained. The abscess also extended to the submaxillary space. Two ounces of thick yellow pus were evacuated and a Penrose drain was inserted into the wound. The patient was dismissed on the fifth day after drainage of the abscess. The amount of penicillin given during this period of hospitalization was 640,000 units. The patient has remained well since.

Case 2.—A white man, aged twenty-six years, was admitted to the hospital on October 16, 1941. The patient had undergone tonsillectomy one week before admission. Two days after tonsillectomy the patient felt ill and began to have severe chills which lasted for an hour. He noted swelling on the right side of the neck. At examination the right tonsillar fossa appeared swollen. There was tenderness in the right superior cervical region. The patient appeared acutely ill.

On the day of admission, a spiking type of temperature with a peak of 101.6° F. was observed. Intravenous administration of sodium sulfapyridine was started. On the second day blood transfusion was performed and a pharyngomaxillary abscess was drained. The infection had caused phlebitis, the site of which was the internal jugular vein. The vein, when opened, contained frank pus. There was no bleeding from the vein when a sucker tip was inserted superiorly or inferiorly. Transfusion was performed on the first postoperative day. On the second postoperative day the temperature rose to 106° F. and continued elevated. On the third postoperative day the temperature reached 107° F.; the patient died a few hours later. Cultures taken from the throat revealed Diplococcus pneumoniae. Cultures obtained from the abscess revealed green-producing streptococci.

Summary and Conclusions

Infection in the neck following tonsillectomy is dangerous. Tonsillectomy should not be carried out in the presence of acute infection in the pharynx or mouth. Great care should be employed in introducing the local anesthetic agent for tonsillectomy. Familiarity with the anatomy of the neck is important in carrying out both the infiltration for anesthesia and the tonsillectomy. After tonsillectomy all patients should be observed

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SPOROTRICHOSIS IN MINNESOTA

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SPOROTRICHOSIS is a rare disease in Minnesota. Montgomery[3] reported the last case in this state in a patient seen at the Mayo Clinic in January, 1937. Gastineau, Spolyar, and Haynes[2] reviewed the literature up to 1941 and could find only three cases from Minnesota.

The disease is comparatively common in plants and much more common in animals than in man. It is believed that man acquires sporotrichosis from contact with plants, infected animals, or animals acting as carriers. There is no record of direct transmission of the infection from man to man although Foerster[1] reported two cases in which the disease was thought to be contracted by handling contaminated dressings from lesions of sporotrichosis.

Sporotrichosis may appear in several definite or mixed clinical types. Localized lymphatic sporotrichosis is the most common type seen in the United States. Our cases were of this type and the initial lesion occurred on the usual place, the hand. The initial lesion is sometimes spoken of as a "sporotrichotic chancre" and may be present for days or weeks before other lesions appear. It was taken for a "boil" in our cases, and that is the usual diagnosis. The initial nodule is round, firm, indolent, and relatively painless. It later undergoes necrosis, liquefaction and ulceration. Days or weeks later other similar nodules appear along the lymphatics draining the initial lesion. They in turn undergo the same changes. The localized lymphatic type rarely disseminates, although the secondary gummatous lesions may remain for months or years.

The disseminated form is seen most frequently in France. Usually no primary lesion is seen, the onset is insidious, and the first symptom is multiple nodules scattered over the skin surface suggesting a blood stream infection. The lesions may or may not ulcerate. The patients are acutely ill and deaths occur.

The epidermal form usually is accompanied by nodular lesions and appears as infiltrated plaques, areas of folliculitis, or eczematous or verrucous lesions. It may mimic many other dermatoses. In some instances it may be an "id" type of lesions accompanying the subcutaneous nodular type of the disease. In both types the constitutional symptoms are mild or absent.

Sporotrichosis of the mucous membranes may be primary or a manifestation of the disseminated form. The eruption is usually in the nose or mouth and appears as erythematous, ulcerated or vegetative lesions simulating more common types of stomatitis or rhinitis.

Skeletal and visceral sporotrichosis is very rare but cases have been reported where the bones, joints, muscles, kidneys, testes, or breasts have been involved.

A positive diagnosis is made by culture and identification of the organism. In our cases the organism, *sporotrichum Schencki,* grew well on Sabouraud's glucose agar slants maintained at room temperature. In some instances it took three weeks to obtain a good growth. Examination of direct smears from pus from the lesions is unreliable and not considered of diagnostic value. It is also generally conceded that the causative organism cannot be identified in microscopic sections of the diseased tissue.

Case Reports

Case 1—D. R., a school boy, aged twelve, cut his right index finger while skinning a rabbit the first of November, 1944. About a week later an abscess appeared on the dorsum of the right index finger over the first phalangeal joint at the site of the cut. This was incised by his local doctor. At intervals of a few days several marble-sized nodules and abscesses began to appear and extend up the arm. Some of these ulcerated and others remained hard, painless and red. On examination there were two irregular olive-sized fungating lesions on the dorsum of the hand, and several marble- to olive-sized nodules on the forearm and arm, extending from the fingers to the shoulder. The lesions were asymptomatic. There was also an olive-sized ulcer on the lateral surface of the middle third of the left leg. The patient felt well and his temperature was normal. The patient had three negative agglutination tests for tularemia, the last one the first week of January, 1945. The blood Wassermann reaction was negative. The Mantoux test, 1:1000, was negative. Fungi were not found in fresh preparations made with sodium hydroxide. *Sporotrichum Schencki* were demonstrated from cultures made on Sabouraud's media. The family doctor prescribed wet packs to the lesions, the abscesses were

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From the Ancker Hospital, Saint Paul, and the Division of Dermatology and Syphilology, University of Minnesota, Dr. H. E. Michelson, director.

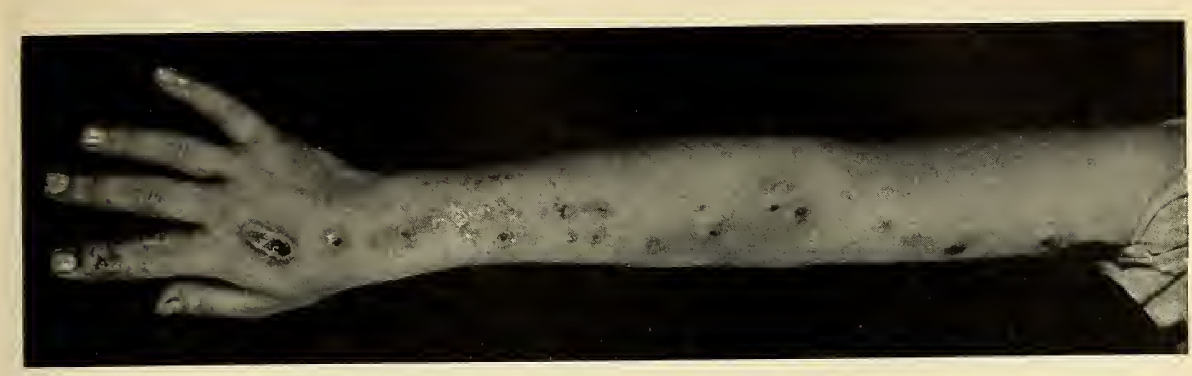

Fig. 1. Case 1. The initial lesion is on the index finger, with ulcers and nodules extending along the lymphatics.

incised and drained, sulfathiazole ointment was applied, and he was given sulfathiazole by mouth for two months without improvement. The lesions healed permanently after the patient took 15 drops of a saturated solution of potassium iodide by mouth for three weeks.

Case 2. (Dr. H. E. Michelson's Case)—M. D., a Mexican, aged forty-one, stated that on September 1, 1945, he injured the third finger of the right hand while loading corn. The fingers and the back of the hand became swollen. The lesion on the finger was incised by his local doctor but did not heal. About September 21 the patient noticed a dark, painless streak extending up his forearm. There were hard nodules at intervals along the streak. The eruption was painless and purplish-red color. The patient was admitted to the University Hospital on November 1, 1945. There was a dime-sized verrucous granulating lesion on the dorsum of the third finger of the right hand; a fluctuant, reddish-brown olive-sized mass on the dorsum of the right hand and a hard cord-like brownish-red streak extending a little above the elbow. There was bean- to marble-sized epitrochlear and right axillary lymphadenitis. The sporothrix was recovered from cultures made on Sabouraud's media. All other examinations, including a roentgenogram of the chest, were negative. The patient was given 45 grains of potassium iodide daily, and the eruption healed in seventeen days.

Case 3. (Case of Drs. F. W. Lynch and G. E. Harmon)—Mrs. O. L., a farmer's wife, aged forty-one, stated that an indolent nodule appeared on the palm at the base of the right thumb in November, 1945. The patient did not remember injuring her hand. The lesion was incised and pus expressed, but it did not heal. In a few days new lesions appeared. When seen in December, 1945, about thirty marble- to olive-sized, red, comparatively painless, subcutaneous nodules or ulcers extended from the hand to the elbow along the lymphatics draining the initial lesion. There was slight epitrochlear and axillary lymphadenitis. The sporothrix was recovered from cultures made on Sabouraud's media. The patient was given 45 grains of potassium iodide a day by mouth, and the lesions healed within three weeks. (Note: The patient stated that cattle on her farm had actinomycosis.)

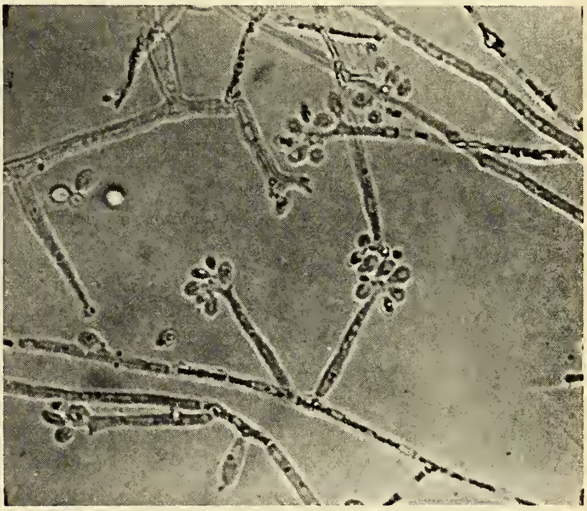

Fig. 2. Case 1. *Sporotrichum Schencki* from cultures on Sabouraud's glucose agar, showing hyphae supporting conidiophores terminated with a cluster of pyriform conidia.

Potassium iodide is considered specific in the treatment of sporotrichosis. In our cases it was specific with rapid cure. The localized lymphatic type, of which our cases were examples, responds more favorably and rapidly to treatment than other types. Roentgen ray therapy may be of value in some cases. In the first case of ours, sulfathiazole was of no value even though given over a comparatively long period.

Summary

Three additional cases of sporotrichosis were reported from Minnesota, making a total of six reported up to the present time. They were of the localized lymphatic type and all responded rapidly to treatment with potassium iodide.

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TUBERCULOSIS AMONG RESIDENTS OF OLMSTED COUNTY OVER THE AGE OF SIXTY-FIVE

Data on Blood Pressure, Hemoglobin and Urine Tests

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TUBERCULOSIS mortality rates in this area are reaching very low levels. Over the last five years, only twenty-four deaths in Olmsted County residents have been recorded as due to tuberculosis. This is less than five per year. If we estimate the population at 48,000, the mortality rate would be 10. The rate for the same period in the whole of Minnesota will approximate 25.1. More striking is the fact that for the calendar year 1946, only three residents of this county died of tuberculosis. It also might be pointed out that during this same year seventy-seven residents died of heart disease, forty-six of intracranial vascular lesions, forty-three of cancer and eight of accidents. Tuberculosis accounted for only 1 per cent of the 293 deaths.

With these low tuberculosis mortality rates, we are surprised and pleased to find an average of twenty-six tuberculosis patients from our county under treatment in various institutions. This is over five per annual death.

Surveys of adult groups of all ages in this area indicate that less than 0.2 per cent have active reinfection-type tuberculosis. This means that the finding of active cases by any survey methods covering the whole population is becoming increasingly more difficult and expensive.

Another well-marked trend has been the increase in the average age of patients admitted to sanatoria. Laird[1] states that no patients over the age of fifty were admitted to Nopeming Sanatorium in 1913. In the years 1923, 1933, and 1943, the respective percentages were 4, 9, and 20. Other sanatorium superintendents have also noted this shift in age.

In 1940, the highest tuberculosis death rate in the Registration Area of the United States for any ten-year age group was 110. This was for the age group fifty-five to sixty-four inclusive.

Considering the obvious decrease in tuberculosis infections and deaths in the general population, and the equally obvious shift toward the older age groups, the officers of the Olmsted County Public Health Association decided to attempt an x-ray sampling survey of older persons in the community.

Through the Rochester City Health Department and the Mayo Clinic, arrangements were made for weekly half-day clinics to be held during the summer of 1946. As an added inducement for patients to come to the clinic, blood pressure tests, hemoglobin tests and urine tests were also offered along with the chest x-ray examinations. The lower age limit was arbitrarily set at sixty-five, partly because this happens to be the earliest age at which persons can participate in the old-age assistance program of the County Welfare Board. Expenses of this clinic, except for certain facilities of the Health Department and the Mayo Clinic, were borne by funds from the Public Health Association, obtained through the sale of Christmas Seals. No charge was made to patients for these rather limited procedures.

Publicity was obtained through the local newspapers, the radio, the Welfare Board, and by various other means. The response varied directly with the amount of such promotional effort.

In Rochester and Olmsted County there are approximately 2,500 persons over the age of sixty-five. Although the total attendance at these clinics was only 162, or 6.5 per cent, this sample revealed several things of interest. Figure 1 shows the age and sex of those who came in.

Since the primary purpose of this project was the discovery of tuberculosis, the x-ray findings will be discussed first. Of the 151 who received chest x-rays, thirteen (8.6 per cent) had definite evidence of reinfection tuberculosis. Only one was a previously reported case. So far, we have been unable to show that any are active cases, but great difficulty has been encountered in obtaining adequate follow-up examinations, so it is quite possible that some may be discharging tubercle bacilli.

Of the lesions seen, eleven could be classified as minimal, and two moderately advanced. None was far advanced. An additional fifteen patients had some apical fibrosis. Sputum examinations were made on four of the minimal cases and on the two moderately advanced cases, but no tubercle bacilli were found. This is consistent with the x-ray appearances which did not suggest activity except in the two moderately advanced cases.

We will continue our efforts to obtain sputum examinations and periodic x-rays on some of these patients, just as we follow other known tuberculosis cases. We are hoping to persuade a few to come in for gastric washings.

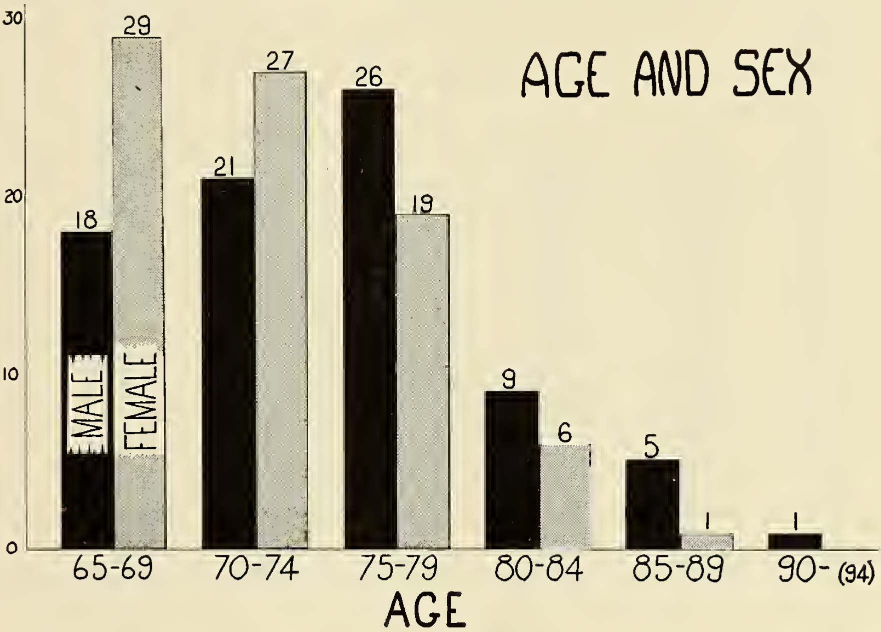

Fig. 1

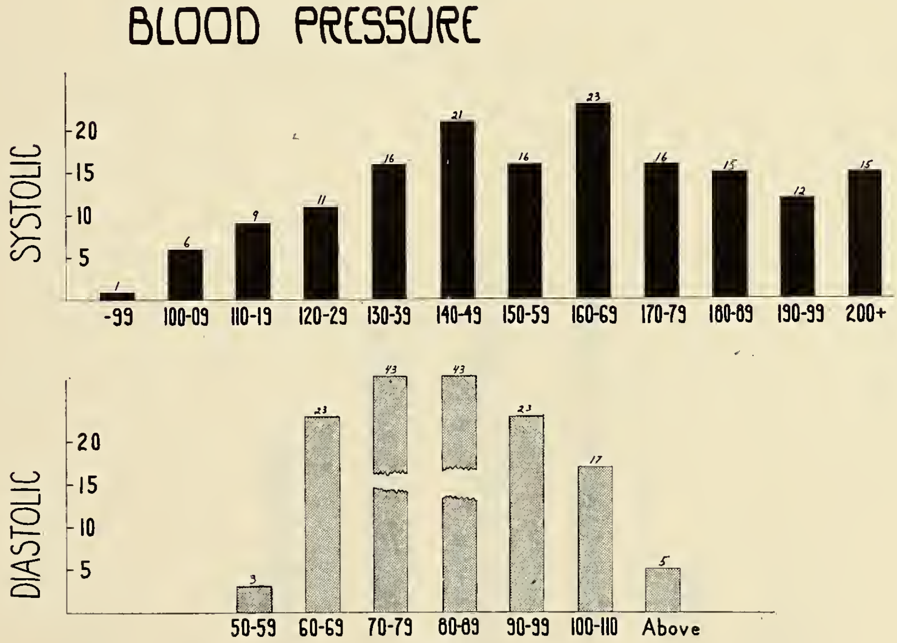

Fig. 2

As is usual in x-ray surveys, other pathologic conditions were also uncovered. Heart enlargement was noted in eleven, and one man had a lung carcinoma from which he has since died.

The other tests, which were offered primarily to encourage attendance at the clinics, also afforded an unusual opportunity for the collection of some limited but valuable data.

The blood pressure determinations were all made by one experienced nurse using the stethoscope and mercury manometer technique. As shown by Figure 2, and as expected, wide variations were encountered, with a large proportion having systolic pressures over 150 mm. Diastolic pressures also covered an extensive range.

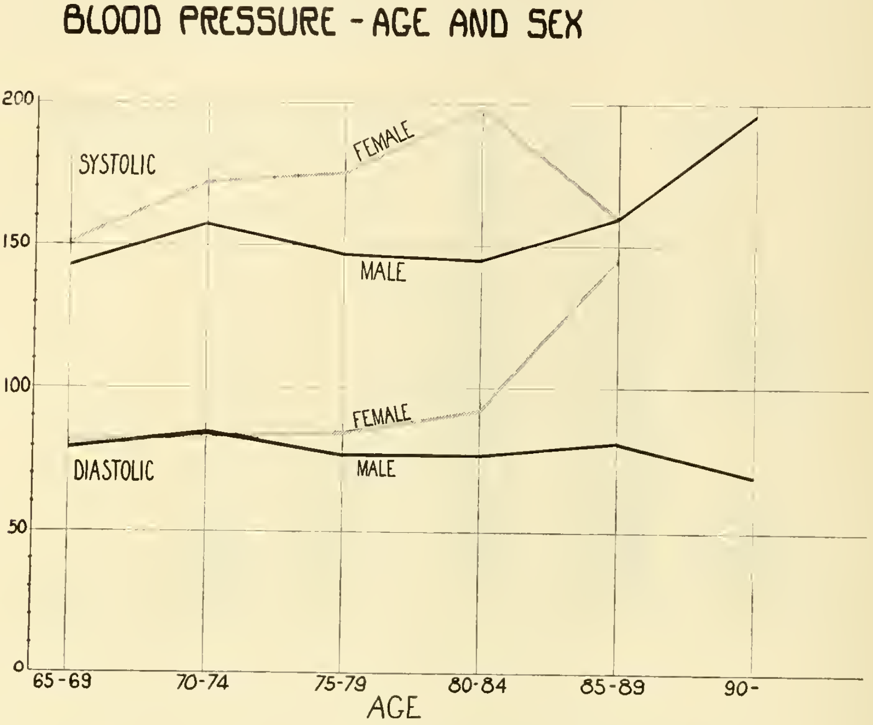

Fig. 3.

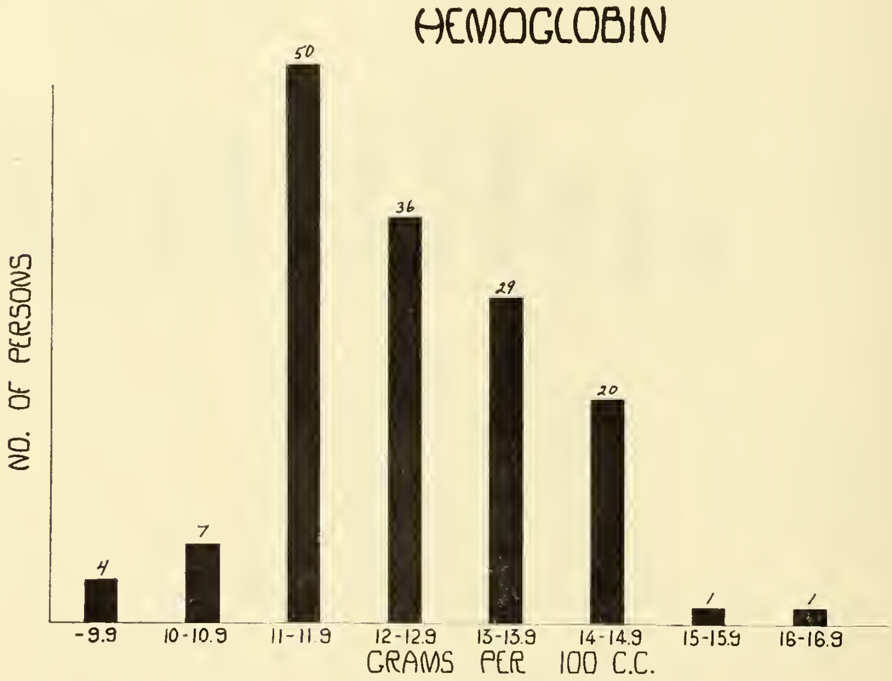

Fig. 4.

In Figure 3, average blood pressures have been tabulated and charted by age and sex. Systolic pressures for women were higher than for men in every age group except in the last two where the number of observations is too small to be of any significance. Diastolic averages, however, did not rise with age, particularly in men. This is consistent with observations on 5,331 men reported by Russek.[2] No such extensive studies on women could be found in recent literature.

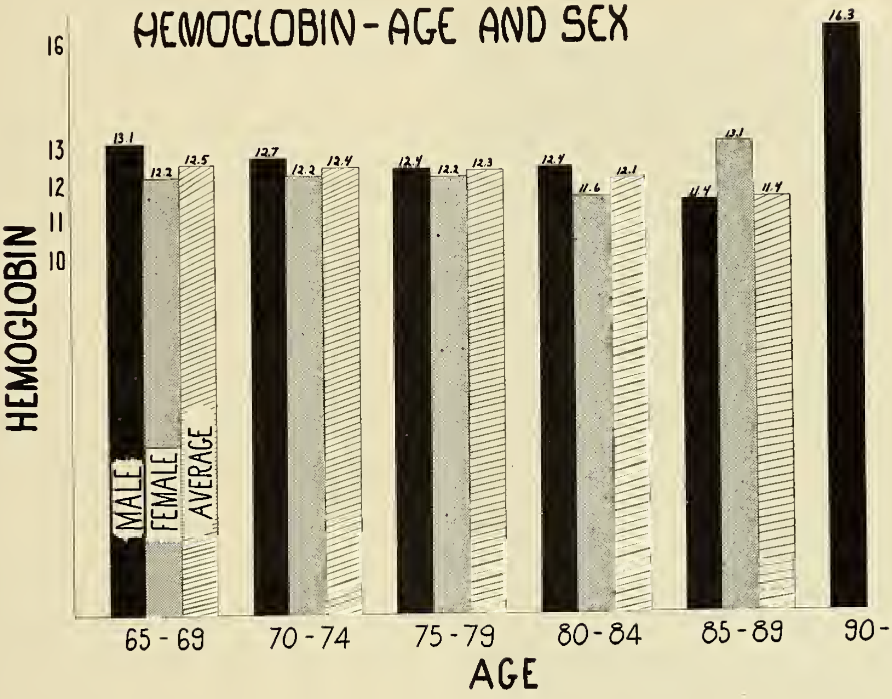

Fig. 5

Although not shown by this chart, the variations within each age group were considerable. For example, the systolic pressure in the group age eighty to eighty-four ranged from 116 to 222, with six of the fifteen below 150, and, interestingly enough, all six in men. The significance of these observations I must leave to the clinicians.

The hemoglobin determinations were done photoelectrically. Although it is often stated that a normal person should have 14 grams of hemoglobin per 100 c.c. of blood, most physicians would agree that this is a rather high standard. As can be seen in Figure 4, all except twenty-one fell below the 14 gram level, and a very considerable proportion below 12 grams.

In Figure 5, average hemoglobins are charted for age and sex. The differences are not great, but the women are consistently lower than the men in every age group. Also there is a definite inverse correlation with age.

This chart was constructed from averages, and does not reveal the variations within each age group. In the seventy-five to seventy-nine age group the lowest was 10.2 grams and the highest 14.2 grams.

The average for persons receiving old-age assistance was 12.1 grams, and for the others 12.6 grams. Considering the fact that of the 150 persons upon whom hemoglobin determinations were made, sixty were receiving assistance and ninety were not, this difference is probably statistically significant.

Qualitative tests on urine for albumin and sugar were made using Exton's solution for albumin and a commercial compressed tablet for sugar. Only one was found with excessive amounts of albumin. He had a systolic blood pressure of 260 mm. and has since died. One of the others with a 1+ albumin was later found to have a large stone in the kidney pelvis.

Three persons had sugar in the urine rated as 3+, one rated as 2+, and two rated as 1+. Only two of these six would consent to go to their physicians for further examinations, and no final diagnoses are available at this time.

Perhaps no great fundamental discoveries were made through studying this limited sample, par-

(Continued on Page 880)

METASTATIC CARCINOMA OF THE HEART

Report of a Sole Metastasis from Carcinoma of the Cecum Diagnosed Before Death

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THE incidence of primary tumor of the heart is very small: eight cases in 480,331 (.0017 per cent), according to the national autopsy experience in internship hospitals from 1938 to 1942, as reported in the *Journal of the American Medical Association*.[10] The frequency of cardiac invasion in various neoplastic diseases, however, is reported to be from 2 per cent[11] to 10.9 per cent.[15] Ritchie[12] at the Wisconsin General Hospital reports 3,000 autopsies with sixteen metastatic tumors of the myocardium. Metastases to the heart have been reported from neoplasms of all the main organs. These metastases are usually generalized but the heart may be the only one present, though this is infrequent. Burke[4] in his series of fourteen cases noted none. Yater[20] in his extensive review makes no specific observation on this point. Ritchie[12] reports one case, a cancer of the esophagus, in which the myocardium was the sole site of remote metastases.

Three routes of invasion are recognized:[4,20] (1) blood stream through the coronaries; (2) lymphatics from the mediastinal nodes against the lymph stream; and (3) direct extension.

Age in the cases reported reveals nothing of note as it corresponds to the age group in which the original tumor is apt to be found. Sex is of no importance. Ritchie[12] reports twelve males in sixteen cases but the autopsy material is weighted in about the same proportion.

Clinically no signs of involvement of the heart may be found even when extensive invasion has taken place. Any impairment and findings can usually be more easily explained by non-neoplastic conditions. Ritchie[12] reports that none of his sixteen cases was diagnosed before death. Fishbert,[5] however, records three cardiac tumors diagnosed by the presence of auricular fibrillation in two and auricular flutter in one. In 1934, Barnes[2] reported a case of a sixty-two-year-old woman in whom a diagnosis of a possible primary sarcoma of the heart was made during life. The findings were bloody pericardial effusion, an electrocardiogram showing interference in conduction, and a biopsy of a node diagnosed as metastatic sarcoma. At autopsy a tumor was found involving the right auricle and ventricle. In 1935, Shelburne[16] reported a primary cardiac tumor diagnosed during life in a twenty-four-year-old negro male by reason of (1) sudden onset of cardiac decompensation without known cause; (2) rapid accumulation of bloody pericardial fluid which did not clot; (3) no evidence of tuberculosis or syphilis; (4) predominance of lymphocytes in the pericardial fluid eliminating acute pericarditis, and (5) heart block. Rosenbaum[13] and others [7,8,12,20] have noted almost complete replacement of the heart by metastatic carcinoma in which few symptoms have been noted.[6,9] Precordial pain, angina, cyanosis, and all other cardiac symptoms or none at all may be present. The location of the lesion will of course determine many of the signs and symptoms noted.

The electrocardiographic findings that occur in the presence of tumors of the heart are not distinctive. Here again the location of the tumor is all important.[2,13,15] Right bundle-branch block,[5,16,19] partial heart block, complete atrio-ventricular block,[7] changes in the P waves,[18] flutter and paroxysmal auricular fibrillation,[1,5,14,17] small QRS complex have all been reported. They have been, in themselves, of little value in diagnosis as the very same findings may take place in many other conditions. Rosenbaum[13] reports a case of cancer of the esophagus with metastases to the heart in which persistent upward displacement of the RS-T segment occurred. The probable explanation was that the neoplastic infiltration caused almost continuous injury to the myocardium.

We are here reporting a case of cancer of the heart. It was metastatic from the colon. It was the only site found. The diagnosis was made before death.

Case Report

The patient was admitted to the St. Andrews Hospital on September 26, 1946, and died on October 10, 1946.

The patient had a questionable history of dyspnea on exertion for eleven and one-half months and was told that she had heart trouble only four weeks previously when a murmur was first heard by her local doctor. There was no history of rheumatic fever. One week previously she was sent to Dr. H. W. Peterson with complaints of pain in the right lower quadrant which had begun fourteen months before and had become more severe in the past month. A barium enema was done before entrance to the hospital and showed a neoplasm of the cecum. The patient was sent to the hospital for operation.

On first examination the patient appeared toxic and somewhat orthopneic and cyanotic on exertion. Blood pressure was 121/86, pulse rate 100, respirations 20. The heart was not enlarged to percussion. There was a loud systolic murmur at the left of the sternum and no diastolic murmurs were heard. P_2 was equal to the A_2. No other findings of significance were noted. A mass was noted in the right lower quadrant. There was moderate tenderness in this area.

The electrocardiogram (Fig. 1) showed sinus tachycardia, a flat T wave, diphasic ST_2 and ST_3, notched QRS—a definitely abnormal tracing. A flat plate of the chest showed a normal heart and chest. A diagnosis of probable neoplastic involvement of the heart was made.

Laboratory examinations showed a negative Kline test and Rh positive blood; hemoglobin 73 per cent, red blood cell count 4,000,000, white blood cell count 13,300, with neutrophiles 65 per cent, lymphocytes 34, and monocytes 1. The urine on September 26 was straw colored, with 1+ albumin and no sugar.

On September 31 at about 3:00 p.m., the patient passed about 300 c.c. of blood per rectum, which was followed by collapse. A gallop rhythm of the heart was noted. On October 1, neurological examination showed a definite weakness of the left arm and leg, and it was thought that the patient had had a cerebral accident or possibly a metastasis to the brain. The pulse improved and was regular but the patient remained listless and unresponsive. Throughout her hospital stay she had a streaking of the stools with blood and a cyanosis of the lips and fingers. She also had slurred speech and a dysphagia. From October 1 until her death the patient remained unresponsive and flailed her arms about a great deal. She was involuntary from that time on. On October 9 a urine odor was noted on her breath. She expired on October 10. Her temperature varied between 97° and 103° during her hospital stay.

The autopsy showed a 161 cm. woman weighing approximately 105 pounds. She was well developed and poorly nourished. Rigor was present as well as hypostasis. There was no edema. The fingernails and toenails were cyanotic. The pupils were 7 mm. and equal. The right leg and arm appeared smaller than the left. The right leg measured 24 cm. at the calf and the left 29 cm. There were small bruises on the right hip and a hemorrhage on the left hip. The left upper arm was swollen and reddened and the veins were very prominent. The peritoneal cavity was smooth and glistening. No fluid was present. The appendix was present and normal. The liver was 11 cm. below the xiphoid process and 3 cm. below the midclavicular line on the right. The pleural cavities showed no fluid. There was an adhesion on the base of the right upper lobe. The pericardial sac contained 50 c.c. of straw colored fluid.

The heart weighed 350 grams and had an enlarged right auricle. A mural thrombus was present in the right auricle. The right ventricle had a tumor filling the entire chamber, with the point of attachment on the posterior side. One knob of the tumor extended through the pulmonary valve. The root of the aorta was normal. The coronaries were patent and showed no sclerosis.

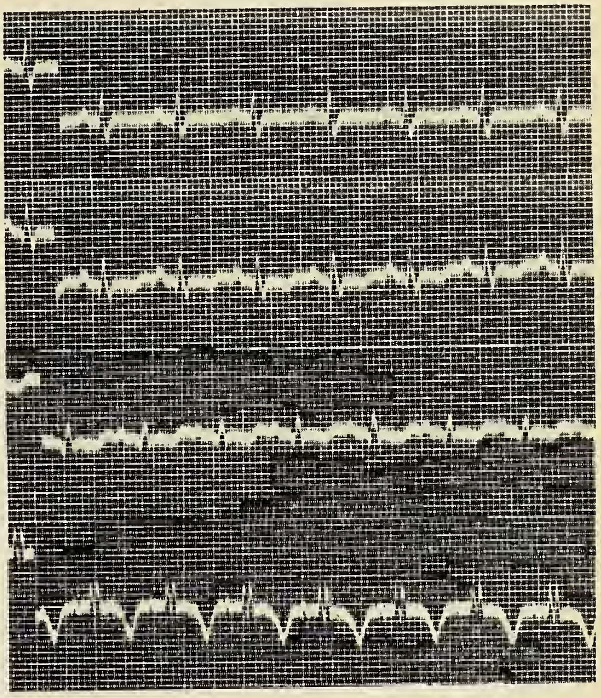
Fig. 1. Electrocardiogram shows sinus tachycardia, a flat T_1, diphasic ST_2 and ST_3, and notched QRS.

The right lung weighed 200 grams and the left 150. The right lung had many small areas of hemorrhage, the largest one measuring 3 cm. in diameter. In the left lung the same small hemorrhagic areas were present.

The spleen weighed 200 grams. It had four hard whitish areas on its surface, the largest measuring 2 cm. in diameter.

The liver weighed 1,600 grams. On cut section it had a pale mottled appearance. The gall bladder was normal and the bile ducts were patent.

Gastrointestinal tract: There were adhesions of the omentum over the cecum. A mass was palpable in the cecum. When the tumor in the cecum was cut, it had a fungating appearance and measured 6 cm. in diameter. There were portions of the tumor which contained cartilage.

The pancreas and adrenals appeared normal. Each kidney weighed 110 grams. Both kidneys had large white nodular masses on their surfaces which extended into the cortex of the kidney and measured 2 by 5 cm. in diameter. Aside from this the kidney surface was smooth. The right ureter was slightly dilated, but the bladder and genital organs appeared normal.

The organs of the neck appeared normal. No enlarged mesenteric lymph nodes were found.

Thrombi were present in the common iliac veins. An embolus was found in the portal vein.

Microscopic: The lungs showed areas of infarct and patchy areas of atelectasis. A section taken through the tumor in the cecum showed an adenocarcinoma, with some sections having a gelatinous appearance.

The kidneys microscopically showed small infarcts; otherwise the glomeruli and tubules were normal.

Sections through the tumor in the heart showed an adenocarcinoma.

The liver had areas of central lobular necrosis typical of chronic passive congestion.

The spleen had thrombi in its arteries and infarction of the parenchyma.

The brain showed a large necrotic area in the right occipital lobe 2 cm. in diameter. No tumor cells were present.

Diagnoses: 1. Adenocarcinoma of the cecum.

2. Large metastasis of adenocarcinoma to the wall of the right ventricle completely filling the chamber.
3. Thrombosis of the common iliac artery.
4. Infarct of the kidney, spleen, and lungs.
5. Thrombosis of left axillary vein.
6. Infarction of the right occipital lobe of the brain.
7. Chronic passive congestion of the liver.

Comment

Given a case of known cancer with no previous history of cardiac pathology, with sudden development of rapid pulse and cyanosis on exertion, a loud systolic murmur only recently heard, a negative history of rheumatic fever, negative findings or history of syphilis or tuberculosis; and beyond that a definitely abnormal electrocardiogram in a young individual—it is quite reasonable to give strong consideration to neoplastic involvement of the heart. The findings in this case justified the diagnosis which autopsy confirmed.

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The following quotation is taken from the U. S. Senate's report on a bill providing for the appointment of a by-partisan commission to streamline the executive branch of our government as reported by the Council on Medical Service of the AMA.

"During the past sixteen years, national and international events have necessitated a constantly expanding emergency government. In the wake of the prolonged economic distress of the 1930's and the four years of direct participation in World War II, the number of principal components of the Federal Government have multiplied from 521, in 1932, to 2,369, in 1947. The annual pay roll of the executive branch of the Government today approximates 6¼ billion dollars which is 1½ billion dollars more than the Government spent for all purposes in 1933. The executive branch now employs more people than all the State, city, and county governments combined. In this sprawling organization called the United States Government, functions and services criss-cross and overlap to a degree which has astounded every student of governmental operation. For example, there are no less than twenty-nine agencies lending Government funds, thirty-four engaged in the acquisition of land, sixteen engaged in wildlife preservation, ten in Government construction, nine in credit and finance, twelve in home and community planning, ten in materials and construction, twenty-eight in welfare matters, four in bank examinations, fourteen in forestry matters, and sixty-five in gathering statistics. Excluding the Army and the Navy, there are more Federal employes on the pay roll today than on V-J day.

"In its annual evaluation of Government budget estimates, the Congress and its committees are constantly faced with a well-nigh insoluble dilemma. In striving to strike an equitable balance between justifiable expenditures and imperative economy, the conscientious search for the necessary facts more often than not leads up dead-end paths or becomes enmeshed in a maze of confusion and doubt. There is nobody who can tell us in detail, and with informed authority, just where we can consolidate, or where we can eliminate, or where, if necessary, we must expand. This situation forces Congress to swing the meat ax rather than manipulate the surgeon's scalpel. Efficient economy cannot be predicated on guesswork, no matter how sincere the effort. Efficient and economical government can be the product only of painstaking study and authoritative analysis."

CLINICAL-PATHOLOGICAL CONFERENCE

CHORDOMA

A Sacrococcygeal Type Case Report

ARTHUR H. WELLS, M.D., ARNOLD O. SWENSON, M.D., and HAROLD H. JOFFE, M.D.
Duluth, Minnesota

Dr. A. H. Wells: Although a rare disease process, chordoma is indeed a most interesting subject for a review.

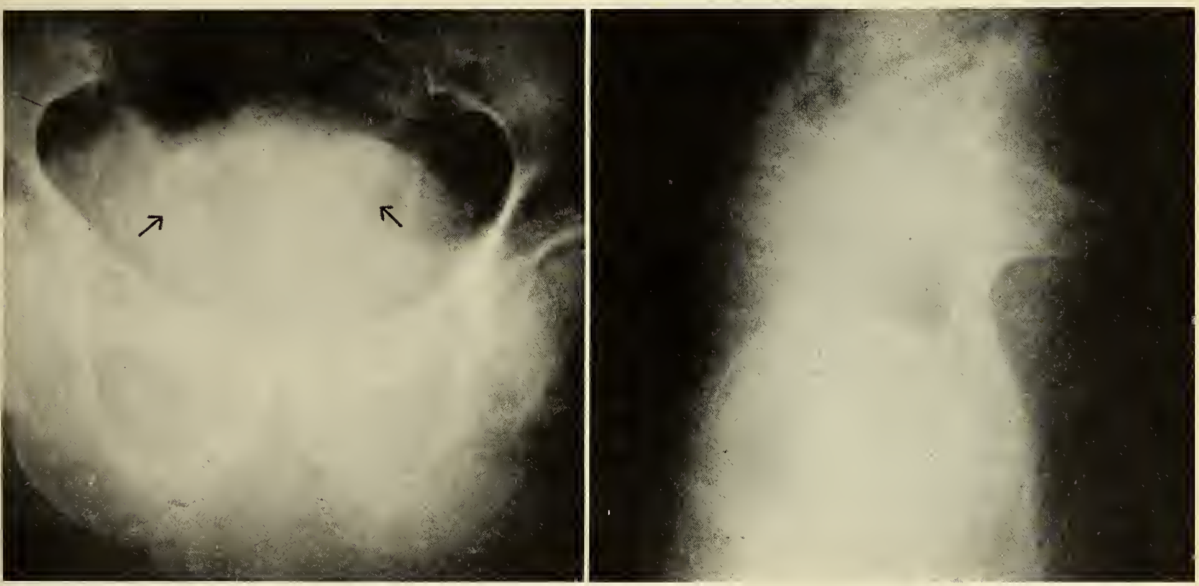


Fig. 1. Anterior-posterior view of soft tissue mass and destruction of sacrum marked by arrows.

Fig. 2. Lateral view of destruction of sacrum.

Case Report

Dr. A. O. Swenson: This eighty-seven-year-old retired white male (Case 82963) was admitted on April 31, 1947, complaining primarily of difficulty of having bowel movements, and secondarily, of a large mass situated over the sacrum. He sustained a bad bump on his back in an auto accident twelve years earlier, but not sufficiently severe to consult a physician. A few months later, he noticed a small lump over the injured area (sacrum). This mass slowly grew in size and caused no trouble until he began having difficulty with his usual daily bowel movements. There had been no pain, sphincteric or other sensory disturbances. His weight and appetite had not changed.

The physical examination revealed the expected usual senile changes in an eighty-seven-year-old, well-nourished, and fairly well-developed male. There was a huge, irregularly rounded, firm mass extending from about the second sacral nerve to the anus and measuring about a foot in diameter. It was firmly fixed to the pelvis over a large base. There was no bruit or fluctuation. The mass could be felt crowding the rectum from the dorsal aspect but did not infiltrate its walls. The patient stood with a decided foreward tilt above the hips.

His blood pressure was 230/130 mm. of mercury. Urinalysis, blood counts, and blood urea nitrogen, sugar, nonprotein nitrogen and creatinine were in a normal range.

Dr. A. L. Abraham: Roentgenograms (Figs. 1 and 2) reveal the soft tissue mass inferior and posterior to the ischial bone. There is destruction of the inferior portion of the sacrum and coccyx of an osteolytic nature. A chest film reveals a double scoliosis of the thoracic spine. There is, in addition, a marked curvature of the lumbar spine with its convexity to the left and hypertrophic changes in the bodies of the vertebrae.

The sacrococcygeal lesion best fits the diagnosis of a chordoma; however, some other bone-destroying lesion cannot be ruled out.

From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota, Arthur H. Wells, Pathologist.

Dr. A. O. Swenson: On April 7, 1947, under procaine spinal, nitrous oxide and ether anesthesia, the large tumor mass was resected except for fragments invading the remaining eroded sacrum. The postoperative course was uneventful. A large defect over the rectum had been packed with gauze. This slowly granulated in over a period of two months.

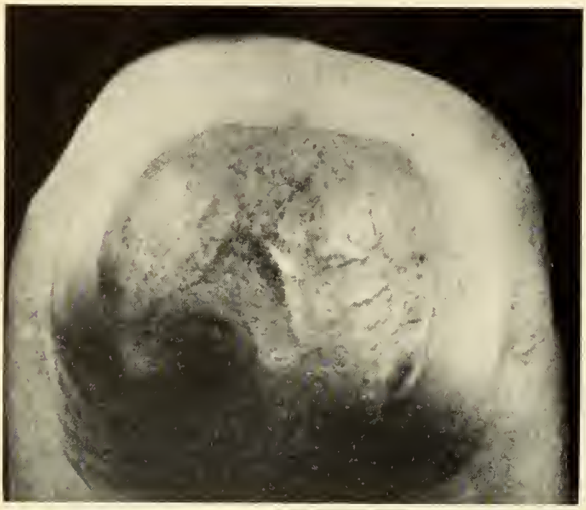


Fig. 3. Dorsal view of the buttocks and the protruding tumor mass.

Dr. A. H. Wells: The irregularily rounded, relatively smooth surfaced mass measures 10.5 by 21 by 23.5 centimeters. There is a strong opague, fibrous capsule covering all but about 20 per cent of the outer surface at the site of attachment to the sacrum. The cut surface (Fig. 4) is made up of numerous irregularly rounded, highly refractile spaces filled with tenacious to solid clear mucoid material. These vary from about 1 millimeter to 2.5 centimeters in diameter and are separated from each other by strong, clear-cut fibrous septa. Occasionally clusters of nodules form larger nodules.

Histologically (Figs. 5 and 6) the prominent fibrous septa separate rounded areas containing what appears to be badly degenerated and vacuolated neoplastic cells. There is a predominance of mucoid material inclosed in delicate fibril-like strands generally arranged in irregular circles. These, at times, appear to be the remnants of cell walls for there are transitions between them and the huge vacuolated or physaliphorus cells which are present in clusters near the margins of nodules. Isolated cells with elongated cytoplasm, with indistinct margins and oval or elongated nuclei, are scattered through the more mucoid areas. A few closely related syncytial cells with three to six nuclei are also found in these areas.

The diagnosis in sacrococcygeal chordoma.

Notochord

The notochord, or corda dorsalis has its origin from the entoderm about the same time that the ectoderm gives rise to a similar parallel dorsally placed longitudinal tube of epithelial cells, the neural tube. It forms the functioning spiral axis in the amphioxus, a species representing the connecting link between vertebrates and invertebrates. In man the structure is generally considered destined to physiologic and anatomic oblivion by the formation of the vertebral axis. However, it may conceivably have a function in the nucleus pulposus into which it has been forced from the bodies of vertebrae by "tissue growth pressure." Remnants of its cells have been described in the semiliquid centers of the intervertebrae fibrocartilages even in adults. Schmorl has observed three cases of persistence of the notochordal channel through the centers of the bodies of vertebrae in adults. Offshoots of the chorda which are located principally in the saggital plane have been repeatedly described.[14] Remnants of notochordal cells have been found on the anterior or dorsal aspects of the vertebral bodies. At the cephalic end the notochord passes through the dens and the dentate ligament to the dorsal surface of the basilar portion of the occipital bone, thence through this bone to its ventral surface to lie immediately adjacent to the pharynx. It then passes back into the basilar bone finally to end up in the dorsal sellar region of the sphenoid bone. At the caudal extreme, the regression of the tail vertebrae results in much coiling and offshoots from the main stem which finally lie in the bodies of the sacrum and coccyx.[14]

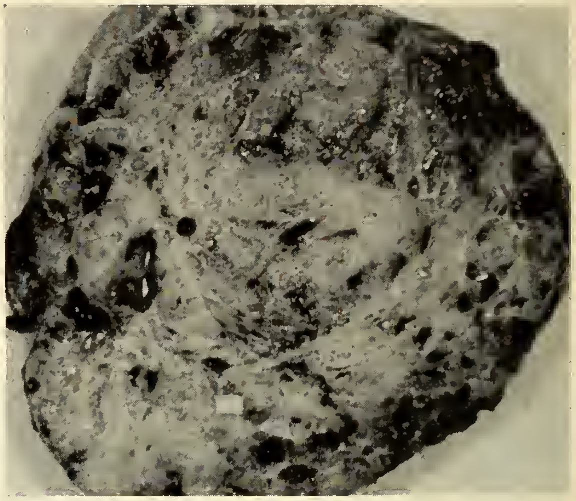


Fig. 4. Cut surface of chordoma.

Pathology

Chordomas are found at any point along the notochord and are generally designated as to location. A modification[8] of Coenen's topographic classification is as follows:

I. Cranial
    (A) Ecchordosis physalifera
    (B) Chordomas
        1. Sphenoid
        2. Spheno-occipital
        3. Nasopharyngeal
        4. Dental

II. Vertebral
  (A) Cervical
  (B) Thoracic
  (C) Lumbar

III. Sacrococcygeal
  (A) Antesacral
  (B) Central
  (C) Retrosacral

Ecchordosis physalifera has been substituted for Virchow's original and erroneous term of ecchondrosis physalifera and is defined as a non-neoplastic and subclinical chordal ectopia occurring on the clivus Blumenbachii (the sloping surface between the sella and the foramen magnum).[22] This apparently noninfiltrating jelly-like mass of notochordal cells ranging up to 3 centimeters in diameter has been an incidental finding in from 1.5 to 2 per cent of autopsies.[23]

Although the true chordomas are most often histologically benign, they are seldom cured because of their characteristic infiltrative nature and their intimate relationship to the central nervous system and its bony support. The tumor cells are occasionally highly embryonic with many tumor giant cells. Metastasis to local lymphnodes, liver, lungs, pleura, skin, et cetera have been found at autopsies in eleven cases, all of which were primarily located in the sacrococcygeal area.[12]

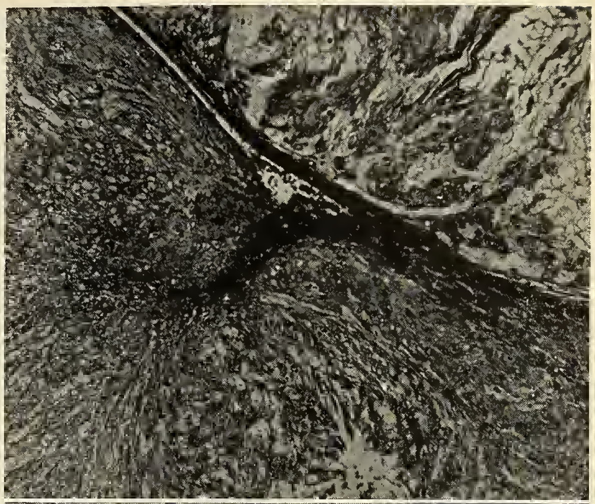
Of the approximately 250 cases of chordoma in the literature, a little over one-third are intracranial and all but a few of the remainder are sacrococcygeal in origin.[6,7,10] One study[14] of the reported cases up to 1941, revealed eighty-one cranial (33.1 per cent), 135 sacrococcygeal (55.1 per cent) and twenty-nine vertebral cases. The latter were divided ino cervical, eleven; thoracic, six, and lumbar, twelve.

No matter in what part of the axis the tumor is located, the main bulk of the neoplasm tends to be in the saggital plain and ventral, dorsal, or central in reference to bodies of vertebra or the basilar bone of the skull.

Of the cranial tumors, approximately 80 per cent are intracranial and 20 per cent extend into the nasopharynx.[2] There are five directions of extension of the cranial chordomata. The most common is from the clivus with dorsal extension. There is also an anterior-cephalic progression from the clivus, an extension into the sella, a directly anterior growth through the sphenoid sinus and a protrusion into the pharynx or the nasal cavities. They are nearly always associated with much destruction of basilar bone. Frequently intracranial nerves are engulfed and seldom the tumor invades the pons, pituitary, or temporal lobes of the cerebrum.

The sacrococcygeal chordomata can be generally classified as anterior, posterior, or central in location. There is nearly always much invasion of the sacrum and extension along its nerves.[3,7,15,20,25] The anterior lesions frequently crowd the pelvic organs and occasionally invade the rectum.

The histology of chordomata reproduces the ontogeny of the notochord from the rarely found regular cavities lined by cuboidal epithelium as found in the primitive tube to the most mature manifestation of stringy atrophic syncitial cells engulfed in mucus, at times found in the nucleus pulposus. The two intervening stages progress from large solid polyhedral epithelial-like cells frequently in cords to vaculated or physaliferous (physalis bubble) cells. The latter are characteristically found in practically all chordomata. The older cells appear to die in their own secretions similar to the common phenomena in mucoid carcinoma. The intracytoplasmic vacuoles stain with glycogen identifying dyes even after the glycogen should have been dissolved out by the fixitative.[7] Intranuclear vacuolization is more rarely noted. Most chordomata have a coarse capsule and well-defined globular, fibrous septa enclosing nodules with a more cellular peripheral zone made up of solid polyhedral and physaliphorous cells and a poorly cellular central area with stringy atrophic and syncitial cells with much extra cellular mucus.[7,21]



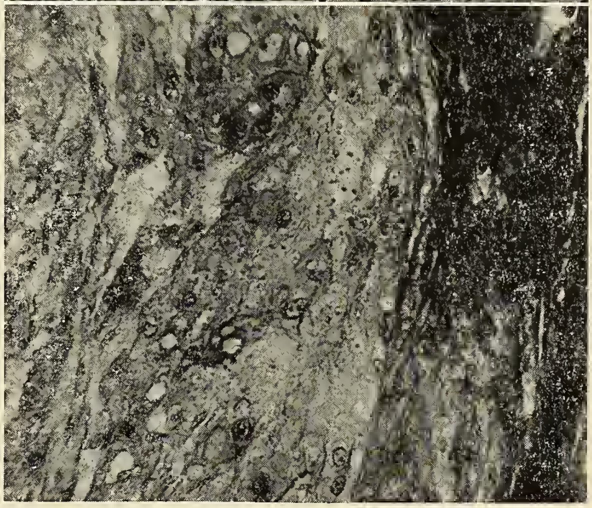


Fig. 5. *(above)* Low power view of fibrous septa and adjacent tumor cells.

Fig. 6. *(below)* Physaliphorus and polyhedral cells typical of chordoma adjacent to fibrous septa.

Clinical Manifestations

The signs and symptoms of chordomata are those of a slowly growing malignant tumor interfering with nerve function or mechanically pressing on adjacent organs at some site along the original path of the notochord. The intercranial lesions generally cause a progression of unilateral or bilateral palsies especially of the sixth, third, and fifth nerves. Intracranial pressure symptoms are next most important, with evidence of interference with the optic nerves, the pyramidal tract and the cerebellum of less frequent occurrence. [5,10,24] A characteristic V-shaped defect is occasionally demonstrated by x-ray examination of the basilar bone.[24] Pneumographic visualization of a cephalic displacement of the fourth ventricle and aqueduct appears to be more reliable than the demonstration of bone destruction.[2,8] Nasopharyngeal extensions may mechanically block these passageways and even invade the paranasal sinuses. None of the findings is pathognomonic except biopsy or aspiration. One must differentiate cranial chordoma from craniopharyngioma (Rathke's pouch), parasellar meingioma, pontile glioma, neurinoma, dermoid cyst, chondroma, myxosarcoma, hypophsis tumor, metastatic carcinoma and pharyngeal carcinoma.

The sacrococcygeal chordomas are nearly always associated with pelvic pain and sometimes sciatic pain. Tenderness is common. Objective and subjective numbness are frequent. Sphincteric disorders and obstruction of the rectum are found.[7,11,25] Sacrococcygeal chordomas are almost twice as frequent in males as females as compared to an almost equal sex occurrence in the cranial neoplasms.[17] The caudal lesions have their highest incidence in the fifth and sixth decades about twenty years after the peak occurrence of sphenoöccipital chordomata.[17] The neoplasms at either site may be found at any age.

The digital demonstration of a mass in the hollow of the sacrum and x-ray evidence of a tumor-like destruction of the coccyx and sacrum should always suggest chordoma. This neoplasm must be differentiated from teratoma, dermoid cyst, ependymoma, giant cell tumor, neurofibroma, Ewings tumor, myxochondrosarcoma, metastatic carcinoma, and carcinoma of the rectum.

Treatment

A cure for chordoma in any site nearly always necessitates radical surgery. Temporary amelioration is all that can be hoped for in the cranial lesions.[13,4] For intercranial lesions a two-stage operation has been devised.[24] First, a cerebellar decompression, with resection of a large part of the cerebellum on the side of greater nerve palsies, and tentorial section are performed. The second operation consists of a piecemeal extirpation of the mass with sacrifice of the fifth, seventh, and eighth cranial nerves.

The sacrococcygeal chordomas have a slim but hopeful chance of complete removal. With this in mind a block resection is advised[3,18,19] with extirpation of the coccyx and sacrum up to, but not including, the second sacral nerve. A two-stage procedure with primary colostomy may be advisable.[18] Those who advise piecemeal eradication simply hope to prolong life.[7] Deep x-ray therapy is generally considered of little value except for occasional cases where alleviation of symptoms and prolongation of life are hoped for.[7,16]

The duration of life from the onset of symptoms has been estimated to from two and a half to three and a half years in cranial chordomata, six and a half to seven and a half years in sacrococcygeal lesions and one and a half to two years in the tumors of the lumbar group.[19]

Summary

The case of an eighty-year-old male with a sacrococcygeal chordoma has been presented. The tumor had grown slowly beginning shortly after trauma to the sacral region twelve years ago. Recent interference with bowel movements was the only complaint. A recurrence is expected following incomplete excision.

A summary of the literature concerning the notochord, pathology, clinical manifestations and treatment is included.

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from July issue)

Albert Plummer, ninth of the eleven children of Dr. and Mrs. Nathan Plummer, was born at Auburn, Rockingham County, New Hampshire, on September 7, 1840. Nathan Plummer, a physician of English descent, was a native of Londonderry, New Hampshire, and, in 1816, a medical student at Dartmouth College; his father, also Nathan Plummer, served three years in the Continental Army during the American Revolution. Albert Plummer's mother, Mahitabel Dinsmore Plummer, of Scotch-Irish descent, was, like her husband, a native of Londonderry, New Hampshire.

Albert Plummer received his early schooling in Auburn and his academic education at Kimball Union Academy, in Meriden, New Hampshire, from which he was graduated on April 28, 1862. For a few months immediately afterward he studied medicine under his father's preceptorship, so that when he enlisted in August in the Tenth New Hampshire Regiment of Volunteer Infantry he possessed special knowledge that was to be of value throughout his military service, to the close of the Civil War, and especially in the last period, since in August, 1864, he officially was appointed hospital steward and in February, 1865, he was promoted to assistant surgeon to his regiment; from February to May, 1865, he was stationed at an army hospital at Old Point Comfort, Virginia. In the following autumn, on his discharge from military service, he entered the medical department of Dartmouth College; later he transferred to the medical school of Bowdoin College, Brunswick, Maine, from which he was graduated in 1867, having completed three full years of medical study. For a year or two thereafter Dr. Plummer taught a rural school, before deciding on the practice of medicine in the Middle West.

Among the adventures and mishaps incidental to the young physician's journey west in 1869, the uncomfortable experience of running out of money just as he entered Fillmore County, Minnesota, proved to be a disguised blessing, of lasting influence. Dr. Plummer, as he had planned to do, stopped in Rushford, in the northeastern corner of the county, to see his half-brother, Henry Plummer, who was a bookkeeper at Sprague's Mills in that town, and to view the prospects for a medical practice. Rushford, he found, already was well supplied with physicians and surgeons, and Henry Plummer, having heard that Hamilton, on the western edge of the county, might be a good location for a doctor, and having a friend who lived there, advised his brother to look over that settlement. On foot and penniless, not having mentioned his financial predicament, Dr. Plummer set out; a few miles east of Hamilton he traded his jackknife, his last piece of portable property, for a glass of milk. Fortunately, Hamilton was greatly in need of a physician and surgeon and he started practice almost at once; Henry Plummer's friend lent him a horse to ride on calls in the community. The newcomer had found his place, and from Hamilton as a center Dr. Plummer followed his profession for the next twenty-four years.

Hamilton, in the valley of Bear Creek, was platted in 1855 in two parts, the upper and lower villages, and by 1858 it had a store, a hotel and a Methodist church and was the home of the Bronson Institute, a Methodist "Academical school of the first class," which already had eighty pupils; the financial endowment of the school failed to materialize, however, and the institute was short-lived. The little settlement, seven miles from Spring Valley and twenty-five from Preston, was near the Mower County line; in fact, Hamilton was in both Mower and Fillmore Counties, but ultimately the entire business portion was on the Fillmore side. Because it was in a wheat-growing section and had excellent water power for grist and flour mills, the village prospered; in the sixties and into the seventies it had two mills, five stores, three churches, machine and blacksmith shops, stage connections with Spring Valley and Rochester, and "mail three times a week, on Monday, Wednesday and Friday." One of the most beautiful and most valued natural features of the place was the "Hamilton Boiling Spring," at the western edge of the village, a never failing source of bubbling clear cold water. With the gradual absorption of flour milling by the huge mills, such as those of Minneapolis, and the failure of the Southern Minnesota Railroad to pass through the little town, Hamilton gradually declined and became by the nineties one of the phantom villages of Minnesota history; its business interests gravitated to near-by Racine, in Mower County, which was founded in 1893 on the line of the Chicago, Great Western Railway.

In Hamilton, in 1869, Dr. Plummer entered into a full life, carrying a heavy practice, succeeding as he did to the local field of Dr. Wallace P. Belden and extending it, acting as dentist whenever required, for in those days none of the small communities had a resident dentist, and serving his community in ways other than professional. Ethical and progressive, he early became a member of the Fillmore County Medical Society (organized in 1866) and of the Minnesota State Medical Society, which was revived and reorganized in 1869. Further evidence that he was an able and conscientious physician is the record in the reports of the State Board of Health that he was one of the eleven physicians of Fillmore County who co-operated with the board to compile the official report on diphtheria in the county for the period from November 1, 1879, to November 1, 1880. In 1882 and 1883, temporarily adding major civic duties to professional, he served in the state legislature as representative from his district. After the passage of the "Diploma Law" of 1883 Dr. Plummer was licensed to practice in the state, receiving certificate No. 738 (R), given on January 15, 1884. In 1895 he was appointed to the Board of Examining Surgeons for the Bureau of Pensions at Spring Valley. He attended services at the Congregational and Methodist Churches, was a Mason (A. F. and A. M.) and an Odd Fellow. Other than in his profession, his greatest interest and pleasure lay in farming, gardening and raising flowers and in fishing and hunting, and happily the conditions of his life were such as to make these occupations and recreations readily possible.

Albert Plummer's marriage to Isabel Steer took place in the village of Sumner, Fillmore County, on Thursday evening, October 10, 1872 (as announced in an item in *Western Progress,* of Spring Valley, on November 6, 1872), at the residence of M. J. Hoag, The Reverend Mr. G. Millet performing the ceremony. Isabelle Steer Plummer, of Scotch-English descent, a schoolteacher in Sumner Township before her marriage, was the daughter of Greenberry Steer, of Adrian, Michigan. Of the four children of Dr. and Mrs. Plummer, Sadie and Ray died in infancy. Henry Stanley, born in 1874, at Hamilton, and his brother, William Albert, born in 1883, at Racine, lived to devote themselves to the practice of medicine.

In 1893, Hamilton having become a hamlet rather than a village, Dr. Plummer moved to Racine, Mower County, a better center from which to serve his patients, and there he remained for eighteen active years. In this place at different times he had as associates three physicians: his son, Dr. Henry S. Plummer, between 1898 and 1901; Dr. Jacob Prinzing, a graduate of the medical department of the University of Minnesota, from 1901 into 1903; and between 1903 and 1910 Dr. E. E. Benedict, also from the University of Minnesota.

The experiences of Dr. Albert Plummer as physician and surgeon, and equally as guide, philosopher and friend to his patients, were countless and of all degrees, from funny to solemn. Of the years in Hamilton and Racine Mrs. Plummer, decades later, used occasionally to reminisce, on request, to her family and close friends. These recollections, always kindly, told by a true raconteur in her own inimitable style, were a delight to the few who were privileged to hear them. One story concerned a family of many children whose parents, not blessed with mental lucidity, never could agree as to the number of the progeny that had been born to them; Dr. Plummer was called frequently to settle the quarrel, for it was a quarrel, and time after time at great inconvenience to himself he responded and with characteristic patience recounted the number of the children, their names, the dates of their birth (and of death, of some of them) and the conditions of each event.

In 1911 Dr. and Mrs. Plummer moved from Racine to make their home in Rochester. Dr. Plummer was then in failing health; his death occurred on March 20, 1912, in his seventy-second year. Mrs. Plummer lived twenty-four years longer and died in Rochester on January 15, 1936, little less than a year before the death, on December 31, 1936, of her older son, Dr. Henry S. Plummer, of Rochester, of whose household she had long been a member. Dr. William A. Plummer, the second son, survives (1947).

Graduated in medicine from Northwestern University in 1910, Dr. W. A. Plummer in June of that year entered the Mayo group as a member of the staff. He is head of a section in medicine in the Clinic and associate professor of medicine, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota.

A brief note on the life and work of Dr. Henry S. Plummer is included here for the reason that, although he began to practice medicine when a resident of Mower County, he was, with his father, active professionally in Fillmore County.

Henry Stanley Plummer, one of the four children of Dr. and Mrs. Albert Plummer, was born on March 3, 1874, at Hamilton, Fillmore County, Minnesota. He grew up in the village, went to the local schools, and early felt the interest in a medical career that was to last all his life. He often accompanied his father on professional calls and helped him in many ways, so that to some extent, even as a youth, he was associated with medicine in Fillmore County. When Henry Plummer was a boy of sixteen a case of thyroid tumor in his father's practice so interested him that from that time he gave thought to goiter; in his years at the Medical School of Northwestern University he followed with special care the cases of thyroid disease, medical and surgical, and in the dissecting room and the experimental laboratories, to learn all that he could about them.

In 1898 Henry S. Plummer received the degree of doctor of medicine from Northwestern University and returned to Racine, where Dr. Albert Plummer had settled in 1893, to join his father in the practice of medicine in a community which extended into Fillmore County and into Olmsted County as well. He remained in the village three years, at the end of which he joined the staff of the Drs. Mayo, Stinchfield and Graham, in Rochester. Let Dr. William J. Mayo, whose lasting pride and satisfaction it was that it had been his privilege to recognize the unusual intelligence and ability of Henry S. Plummer, tell the story:*

> It was in the latter part of the year 1900 that I was called in consultation to see a patient by Dr. Albert Plummer, a well-known practitioner of Racine, Minnesota. Dr. Plummer had two sons, Henry the elder and William the junior.
>
> I drove out the twenty miles from Rochester to Racine, to find that Dr. Plummer was ill in bed with a cold, but he said that his son Henry, who recently had been graduated in Medicine at Northwestern University, was in practice with him and would be glad to go with me to see the patient. It was arranged that I should leave my team of horses and ride the seven miles with Henry, who came out carrying a microscope in a case in his hand. We got into a little buckboard behind a gray horse and started on an hour's drive to see the patient. During this ride Henry talked to me about the blood, of which I did not know any too much. He had an extraordinary amount of information about the composition of the blood, its characteristics and function, much of which I realized was not to be found at that time in print.
>
> The case we were to see was one of leukemia, of the type with a diminution rather than an excess of the white cells; at that time it was called aleukemic leukemia; it is now designated leukopenic leukemia. Henry took a drop of blood from the ear of the patient, put it under the microscope and demonstrated the findings to me. He called in the hired man and a member of the family and took blood from each of them and under the microscope contrasted it with the blood of the patient for my information. On the way back he continued to talk about the blood; I continued to listen, and I learned much. He also spoke of interest in the thyroid gland, to which subject my brother, Dr. Charles H. Mayo, was devoting a great deal of study.
>
> When I got home that night, I told my brother, "Dr. Plummer has a son in Racine who certainly knows more about the blood, at least, than any one I have ever met. I think he is really an extraordinary young man, and I believe we had better try to bring him here and add him to the staff to bring our laboratories up to date." At that time our laboratory equipment and routine were fairly good, about that commonly found in general practice, but largely confined to surgical needs. I wrote young Dr. Plummer and asked him to come up to talk with us. He came, we went over the situation, and he came on the permanent staff early in the year 1901, thirty-seven years ago.

Dr. Plummer remained with the Mayo Clinic the rest of his life, making contributions of almost incalculable value to the institution and in many fields of medical science. Wherever modern medicine is known, there is knowledge of his work on the blood, on esophageal stenosis, on bronchoscopy and, especially, on the diagnosis and treatment of diseases of the thyroid gland. He was a master in mechanical detail also; the Mayo Clinic buildings, the first in 1912, the second, adjoining, in 1929, are monuments to his genius, marvels of efficiency for the performance and correlation of scientific work.

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*Excerpt from Dr. Mayo's article "The Work of Dr. Henry S. Plummer," published in the Proceedings of the Staff Meetings of the Mayo Clinic, 13:417-422 (July 6), 1938; reprinted in the Collected Papers of the Mayo Clinic, 30:928-934, 1938.

Henry S. Plummer was married on October 4, 1904, to Daisy Berkman, of Rochester. He died at his home in Rochester on December 31, 1936, at the age of sixty-two.

Inasmuch as the greater part of Dr. Plummer's distinguished scientific career was identified with the Mayo Clinic, a detailed biographical account will be given in the story of the growth of medical practice in Olmsted County.

David Frank Powell, a graduate of the Medical College of Louisville, Kentucky, was a successful and popular physician who practiced medicine in Lanesboro, Fillmore County, in the seventies and into the eighties.

When Dr. Powell came to Lanesboro, he was accompanied by his brothers, George and William, also practitioners, both of whom subsequently studied at medical schools in Burlington and Keokuk, Iowa, from which they are said to have emerged as full-fledged doctors of medicine. The three brothers, David Frank Powell especially, were picturesque figures, tall and large, wearing their long hair flowing to their shoulders in the manner of "Buffalo Bill" Cody; in fact, Buffalo Bill (William Frederick Cody, a native of Scott County, Iowa, who lived from 1846 to 1917), was their admired and good friend. In 1880, on the occasion of a celebration in Lanesboro, Colonel Cody came to the village in order to be present at a powwow and to visit the Powells, and at that time he enlisted Dr. Powell's help in Cody's Wild West Show, which came into full flower in 1883. Dr. Powell stayed with the show for a while during its modest beginning but later returned to medical practice.

Sometime in the seventies Dr. Powell, who apparently had unusually sympathetic understanding of the Indians, received from a Siouan tribe farther west in the state the name "White Beaver," and this endorsement of him by their kinsmen brought him the friendship and acceptance of the local Winnebago Indians, with whom he evidently was on the best of terms, for in December, 1879, a band of Winnebagos in Lanesboro "got up an exhibition under the patronage of Dr. Powell and realized almost $50." On occasion, furthermore, they would rally to his defense: At times Dr. Powell, uplifted by liquor, so ran a reminiscent account, would don a beautiful suit of buckskins, no doubt the gift of his Indian friends, get on his horse and tear up and down the streets of the village yelling and shooting off revolvers, one in each hand, to such effect that the Indians near town, fearing that he was in trouble, would hurry to the rescue, only to be assured by White Beaver that he was all right and that they might return to camp.

Mr. C. A. Ward, long a resident of Lanesboro, has described these scenes of Dr. Powell's revelry and has given other vignettes of this physician who must have been a source of interest to his more staid fellow citizens. A crack shot, Dr. Powell delighted in displaying his marksmanship, a pastime in which he was encouraged by his boon companions, Frank Bergey, who was Mr. Ward's brother-in-law, and John Rogers. Mr. Bergey, in particular, had such confidence in White Beaver that he often and cheerfully would support a potato or an apple on his head as a target for his friend who for the moment fancied the role of William Tell. When Mr. Ward was a youth he had trouble with his eyes: Dr. Powell treated him for the disorder, kept him in a dark room a week or ten days, and the eyes were cured "slick as a whistle," and evidently remained in that condition for they were functioning without the aid of glasses, except for reading, when Mr. Ward, in 1941, was eighty-seven. Also, while Dr. Powell was still in Lanesboro, he performed "the first appendectomy on record," on a farmer living three miles southeast of Whalan, and it is said that Minneapolis newspaper in recent years published an article about it; this reference has not been susceptible of confirmation by the writer. On one occasion Dr. Powell himself was the patient, when in August, 1877, he was bitten by a rattlesnake; as has been told, Dr. Luke Miller, then of Lanesboro, formerly of Chatfield, "prescribed R. spiritus frumenti, ad lib."

Reminiscent comments on Dr. Powell's professional courage and skill are substantiated by various editorial notes of praise in county newspapers, among them the *Lanesboro Journal* and the *Rochester City Post.* In 1879 Dr. Powell's "Lanesboro Sanitarium," about which unfortunately, details are not known, was in full operation. Late in that year it was stated that Dr. D. F. Powell, "Lanesboro's skillful physician and surgeon, has been driven to the curtailment of his general practice in order to meet the demands of his special practice in surgery and the treatment of female diseases. From five to a dozen different ladies from neighboring towns and cities are constantly under his care at the Sanitarium and his success is bringing him customers for miles around." And early in 1880 it was stated that in the past fifteen months Dr. Powell had performed sixty-one operations for cross eyes and that every operation had been successful.

In 1880 Dr. Powell removed to La Crosse, Wisconsin, where in a broader sphere he continued his colorful career, practicing medicine and taking an active part in local and civic affairs; for many years he was mayor of La Crosse. After the passage of the "Diploma Law" in Minnesota, in 1883, Dr. Powell was licensed to practice in this state and received certificate No. 42 (R), given on October 11, 1883.

In the early eighties the White Beaver Medical and Surgical Institute of Saint Paul and La Crosse was in operation, by Dr. Powell. In 1883 there appeared among advertisements of medicines and appliances in the *Northwestern Lancet* of September 15 an endorsement by Dr. D. F. Powell of Celerina, The Nerve Tonic: *"I believe that Celerina is the best nerve tonic in use.* In one case (in which no other remedy was of benefit) a cure was effected. My patient was grateful and so was I."

And in the *Chatfield Democrat* of February 16, 1884, Dr. Powell had a full column advertisement for "Cough Cream made only by Dr. Frank Powell, Medicine Chief of the Winnebago Indians." To this the editor added: "Dr. Frank is having a lively tussle with the state medical board and is coming out on top. He has the reputation of being a first-class physician. We know he is a good advertiser, and what is more, does not pay for it grudgingly."

When, in May, 1906, Dr. David Frank Powell died, *the Journal of the Minnesota State Medical Association and Northwestern Lancet* stated, "Dr. D. R. F. Powell, known as 'White Beaver,' died last month. Dr. Powell was a man of no mean attainment, in medicine and other lines, and lived a life of usefulness."

George Powell, brother of Drs. David Frank Powell and William A. Powell, was a practitioner of medicine in Lanesboro. He and his brother

William in the winter of 1881-1882 spent a few months, according to the *National Republican* of Preston, in attendance upon medical lectures and in other preparation for a more thorough practice of medicine, and on their return to Lanesboro late in March, 1882, opened an office in the village for resumption of their professional work.

William A. Powell, as stated, was the brother of Drs. David Frank Powell and George Powell. Little has been learned about him except that he was well liked, as were his brothers, and that when he and Dr. George Powell returned in March, 1882, from additional study at medical schools, presumably in Burlington and Keokuk, Iowa, they renewed their medical practice "among old friends" in Lanesboro.*

Albert Wentworth Powers was born on March 31, 1850, at New Castle, Ontario, Canada West, the son and one of the five children of Calvin Siscoe Powers and Mary Ann Bailey Powers; the other children were Hartwell and Helen, older than Albert, and Martha and Frederick, who were younger. His parents both were primarily of English descent and natives of Canada; Mary Ann Bailey was born in Canada East.

The recorded genealogy of the Powers family in America dates from 1639 with the birth of Walter, who with his wife early immigrated to this country. Of Calvin Siscoe Powers' great uncles, eight fought throughout the American Revolution. Representatives of the Bailey family came from England around 1630; among their descendants one was an officer in the Revolution; many others have been clergymen. Members of the present generations of the Powers family have stated that a distant cousin of Albert Wentworth Powers was the Hart for whom Hartford, Connecticut, was named; another cousin married a McDougal, governor of Massachusetts; a third was descended directly from the wife of Millard Fillmore, onetime President of the United States.

Calvin Siscoe Powers, father of Albert Wentworth, Harley, Frederick, Helen and Martha, was a man of originality and force of character. Himself a native of Canada, his father was born in Vermont and his mother in Ireland. Leaving Canada in 1860, he brought his family to Waukokee, near Carimona, in Fillmore County in the period when Indian uprisings were imminent in Minnesota; his grandchildren have recalled stories, told them by their parents, of the frequent warnings and scares. A member of a family that had produced artists in various lines, Calvin Powers' tastes and talents ran to the study of general science, to sculpture, but chiefly to literature, public speaking and politics. He had been the editor of a literary paper in Canada; in 1878, in Minnesota, he was editing the *Dollar Weekly* at Wykoff in the interest of the Greenback Party; the following year he became editor of the *Fillmore County Radical;* in the same general period, of the *Fountain Radical,* and in April, 1881, he began the publication, at Rochester, in Olmsted County, of the *Rochester National,* also a Greenback paper and a large one, of eight columns, well executed and "edited with much spirit;" after six months, however, he returned to Fountain. In 1879 and in 1881 he represented the district in the state senate. In most of these enterprises his son, Albert Wentworth Powers, by 1872 a physician, was his associate.

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*Information has been received in the archives of the Wisconsin State Historical Society there are numerous letters written by Dr. Powell and his physician brothers, all of whom practiced in Wisconsin after leaving Lanesboro, Fillmore County, Minnesota.

Albert W. Powers went to district school at Waukokee and in due time studied high school subjects under tutors. In 1869 he entered the office of Dr. Lafayette Redmon, at Preston, as a student to learn what he could of medicine and surgery before going to Chicago to enroll at Rush Medical College. The course of 1871-1872 at Rush was interrupted by the great fire of October 8 and 9, in which the college buildings were reduced to piles of brick and twisted iron and half melted apparatus. Among the students in the city who became part of the huge army of homeless citizens was Albert Powers, who lost most of his personal property in the fire and narrowly escaped with his life. The faculty members of Rush in a few days reassembled classes; the Cook County Hospital had offered the use of a clinical amphitheater for a lecture room and the Chicago Medical College the use of a dissecting room; both aids were accepted and the students of Rush Medical College were enabled to continue their work.

From Chicago Dr. Powers returned in February, 1872, to his home town of Fountain to begin his medical practice, and for a year or two immediately thereafter he was in partnership with Dr. John A. Ross; Dr. Powers was in Fountain, Dr. Ross retained his residence in Preston. By 1874 this association had been dissolved, and Dr. Powers and his father, Professor Powers were putting up the stone building that was to be occupied by them as drug store and residence. In later years the doctor's consulting rooms and his medical library were in his separate residence; after his death the books were placed in the drug store, where they have remained (1943).

The year after the completion of his medical course, Albert Wentworth Powers was married, on February 21, 1873, to Amanda Justina Bickford, of English descent, born near Rochester, New Hampshire, a daughter of Ira Bickford. Dr. and Mrs. Powers were the parents of five children, Elsie, Albert, Frederick, Alta and Glenn.

Dr. Powers was a good citizen, sharing the life of the community as civil servant, businessman and general medical and surgical practitioner. At one time or another in the nearly fifty years of his adult life there, he held almost every town and village office and county and state office in addition. He was justice of the peace, mayor, councilman, a member of the school board, and in 1912 he was rounding out thirty years as town clerk. When his father was state senator from the district, Dr. Powers went along on appointment as clerk for the senate.

In his capacity as physician he carried on a heavy practice, was local health officer, co-operating with the State Board of Health, county coroner from 1895 to 1896, and for a time he served, with Dr. W. W. Mayo, of Rochester, on the pension board for veterans of the Civil War. During most of his professional life prior to 1900 he was the only physician in the village; for a year or so in 1885 and 1886 Dr. Ole T. Hoftoe, newly graduated from Rush Medical College, was in Fountain before going on to Lanesboro and, in 1888, to Abercrombie, North Dakota. Under the medical practice acts of 1883 and 1887 Dr. Powers was authorized to practice in the state, in official registers of physicians of Minnesota he is listed as the holder of an exemption certificate. Part of the record, as embodied in the following letter, is of interest in connection with methods of licensure:

State of Minnesota, State Board of Medical Examiners
Seven Corners, St. Paul, Minnesota, June 3, 1899.

Dr. W. A. Powers
Fountain, Minnesota.
Dear Doctor:

I have received your affidavit of practice prior to the law of 1887. This will be placed on file in the office of the Secretary of the State Board of Medical Examiners. This gives you the legal right to practice medicine in the state of Minnesota. No other certificate is provided by law.

Sincerely yours,
(signed) John B. Brimhall,
Secretary

This letter duly was filed and recorded in the office of the Clerk of the Court of Fillmore County.

To his patients Dr. Powers was friend, confidant and adviser as well as physician. His fellow practitioners who came into the county soon after the turn of the century have spoken of Dr. Powers as an interesting character, a pleasing personality. He liked good stories, that is, funny stories, to hear and to tell, and some of his favorites still are quoted. He was a supporter of the Baptist Church of Fountain and, when this denomination was superseded in the village by the Methodist Church, he lent his support to the latter. In sympathy with fraternal organizations, he was a member of several, among them the Masonic Lodge (A. F. and A. M.) and the Royal Neighbors of America. A very dark brunet, with black eyes, when he still was a young man he began to wear a black flowing beard; as the years whitened his hair and beard and added to his weight he became in appearance so much the conventional figure of Saint Nicholas that children who did not know him addressed him as "Santa Claus."

Dr. Powers died of heart disease at Fountain on May 30, 1921. Of his five children three survived him; Frederick of Kansas City, Missouri; Alta (Mrs. Gilbert) Kolstad, of Spring Valley, Fillmore County, who before her marriage had been a teacher in Houston, Rushford and Lindstrom, and a teacher and assistant principal of the Fountain grammar school; and Glenn, formerly principal of the high schools of Ely and Gilbert, Minnesota, of later years a photographic artist. On November 8, 1943, Mr. Glenn Powers died suddenly from cardiac disease at his home in Virginia, Minnesota. Of the original family, his brother and his sister were living.

Donald Bannerman Pritchard (1865-1931), a native of Fort Garry (Winnipeg), Canada, became one of the distinguished physicians of Minnesota. On graduation in medicine and surgery from the University of Edinburgh, Scotland, in 1887, Dr. Pritchard returned to America, and in April, 1887, having received Minnesota state license No. 1370-1 (R), he began his career as a physician in the village of Rushford, Fillmore County. In 1889 Dr. Pritchard moved from Rushford to Winona, Winona County, where he spent the remaining forty-two years of his useful life.*

Charles Wilbur (sometimes spelled Wilbor) **Ray,** born in 1856, was a graduate of the Bennett College of Eclectic Medicine and Surgery, of Chicago, in 1885. Two years later he was licensed to practice medicine in Minnesota,

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*When the *History of Medicine in Winona County* appeared in MINNESOTA MEDICINE, in 1941, because of an unfortunate inadvertence it lacked a biographical note on Dr. Pritchard. A detailed sketch of Dr. Pritchard, originally prepared by the present writer as part of the story of medicine in Fillmore County, will appear separately in due time and ultimately will be included with material on the physicians of Winona County.

receiving state certificate No. 1414 (E), given on May 26, 1887, and in the next twenty-two years he followed his profession in various localities in the state. In 1890 and presumably for a year or two previously he was in St. Clair, Blue Earth County; in 1893 he was practicing in Owatonna, Steel County; and in 1894 and 1895 he was resident in the village of Canton, Fillmore County.

In Canton Dr. Ray had his home and office together in a house "back of the Presbyterian Church, facing on the opposite street." From conversations of her elders in the village it has been recalled by an early citizen, who was then a child, that Dr. Ray in his preferred specialty of obstetrics advocated the use of a mysterious "twilight sleep," and that in addition to his general medical practice he on occasion undertook surgical operations. His professional contemporaries in Canton were Dr. Henry H. Haskins and Dr. Robert A. Sturgeon.

Dr. Ray has been described in Canton as tall and dark, of medium weight, a man of social aptitude and of artistic and dramatic ability that found expression in home talent plays, which he coached and for which he designed and painted the scenery. These extraprofessional activities were not regarded with favor by certain of the residents, who in consequence called him visionary. It was Dr. Ray who, one evening in March, 1895, when the Modern Woodmen of America in Canton were holding a meeting, initiated another organization; by prearranged plans with the ladies of the village who were eligible to become members of the Royal Neighbors of America, Dr. Ray brought this group into the meeting hall during recess and then and there organized the Surprise Camp of the Royal Neighbors.

On leaving Canton in 1896, Dr. Ray moved with his wife and children to the village of Nicollet, in Nicollet County, succeeding to the practice of the late Dr. Joseph Wicke, whose stock of drugs and medicines he bought from Mrs. Wicke. For part of 1896 Dr. Ray was the editor of the **Nicollet Leader.** At this period of his life he was a member of the Minnesota State Eclectic Medical Association and for some years its secretary. It has been said that the summer of 1899 he spent in Boston and other eastern cities visiting hospitals and that in 1900 he moved with his family to California; and record exists that in 1901 he was licensed to practice medicine in California.

Within the memory of a citizen of Nicollet who in 1941 was fifty years old, Dr. Ray at two different, unspecified periods practiced medicine in that village. It seems probable that after a relatively short time in California he returned to Nicollet, for in 1907, then a member of the American Medical Association, he was living in the village, and he remained that at least into 1909. By 1912 he again was in California, in Los Angeles, where his death occurred in the following year. Mrs. Ray and the children in 1941 were said to be living in Los Angeles; attempts to communicate with them for the purpose of this sketch have not been successful.

(To be continued in September issue)

President's Letter

THE GENERAL PRACTITIONER

IN an effort to uphold the prestige of the general practitioner and to encourage him to provide his patients with the kind of medical care which he is peculiarly qualified to furnish, the Council on Medical Education and Hospitals of the American Medical Association submitted a significant supplementary report to the House of Delegates of the American Medical Association at its recent meeting in Atlantic City.

Attention was called to the fact that a Section on the General Practice of Medicine was established in 1945 and that almost a thousand physicians had registered in this section at the 1946 Scientific Assembly. Also, it was recalled that the House of Delegates had expressed its approval of the organization of sections on general practice in state and county medical societies. "In spite of this," the Council report stated, "certain hospitals have inaugurated as a matter of policy limitation of their staff appointments to physicians certified by specialty boards or holding membership in certain special medical societies. Such a policy is contrary to the principles of the Council and seems unsound. In publications which have dealt with hospital standards, the Council has expressed repeatedly the need for a hospital staff of high quality; it has never mentioned certification by a specialty board or membership in a special medical society as an important credential."

The report called attention to a resolution which was adopted by the House of Delegates at the San Francisco meeting in 1946 and which in part read as follows:

"Whereas, Many hospitals have not established general practice sections in their visiting active staffs and their governing heads are doubtful whether such action has the approval of the bodies which set up the rules and regulations for the approval of their hospitals for interns and residents; therefore be it

"Resolved, That hospitals should be encouraged to establish general practitioner services. Appointments to a general practice section shall be made by the hospital authorities on the merits and training of the physician. . . . The criterion of whether a physician may be a member of a hospital staff should not be dependent on certification by the various specialty boards or membership in special societies."

The report stated further that the Council had published a statement in the *Journal of the American Medical Association* of May 3, 1947, which read in part as follows: "It was never intended that staff appointments in hospitals generally, or even in hospitals approved for residencies, should be limited to board-certified physicians, as is now the policy in some hospitals. . . . Hospital staff appointments should depend on the qualifications of physicians to render proper care to hospitalized patients as judged by the professional staff of the hospital and not on certification or special society memberships.

"In this opinion," the report continues, "the Council has the full concurrence of the Advisory Board for Medical Specialties."

Also, "The American Board of Surgery is not concerned with measures that might gain special privileges or recognition for its certificants in the practice of surgery. It is neither the intent nor has it been the purpose of the Board of Surgery to define requirements for membership on the staffs of hospitals."

The concluding note in the supplementary report was to the effect that the Section on the General Practice of Medicine is considering the establishment of an American Board of General Practice. The Council expressed the opinion that the wisdom of such a move at this time is debatable. Possibly a greater usage of the skill of the general practitioner in hospital practice may make superfluous the need for a specialty board.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

IF YOU WERE TOLD—

That President Truman in a message sent to Congress, November 19, 1945, urged the enactment of a national health program typified by the Wagner-Murray-Dingell Bill which had been submitted to Congress;

That Thomas Parran, Surgeon General of the U. S. Public Health Service, on December 10, 1945, sent a letter to all his field men and operatives throughout the country telling them that the executive agencies of the Government had been instructed by the President to assist in carrying out this proposed national health program;

That pursuant to this policy, the U. S. Public Health Service launched a series of so-called "health workshops" throughout the country which were meetings held in order to develop pressure groups favoring the Wagner-Murray-Dingell Bill;

That the "health workshops" were planned, conducted and largely financed with Federal funds by a key group on the Government payroll, who used the workshop method of discussion subtly to generate public sentiment in favor of socalized medicine;

That the Government paid the expense of attendance at these "health workshops" of Federal employes in the USPHS, the Children's Bureau, the Office of Education, the U. S. Employment Service, the Department of Agriculture, and the Bureau of Research and Statistics, Social Security Board;

That Federal employes arranged these "health workshop" meetings, invited delegates, trained delegates, presided at meetings, and framed resolutions;

That the Bureau of Research Statistics in the Social Security Board prepared pamphlets and propaganda literature for the CIO, AFofL and Physicians' Forum (a propaganda agency for the Wagner-Murray-Dingell Bill) biased in favor of socialized medicine;

That $75,000,000 were spent in 1946 in the executive branch of the Federal Government for publicity and propaganda purposes and that during that year 45,000 Federal employes were engaged full or part time in such activities;

That Mr. Isadore Falk, Director of the Bureau of Research and Statistics, urged that one Jacob Fisher, a member of his staff and an avowed communist, be sent to New Zealand at Government expense to study compulsory health insurance there—

Would you believe it?

Yet this information* and more, too, was unearthed by a subcommittee of the Committee on Expenditures of the Executive Department of the House of Representatives, was transmitted to the Speaker of the House, and was brought to the attention of the U. S. Department of Justice with the request that the Attorney General at once initiate proceedings to stop this illegal expenditure of public money.

While it is quite proper for the President of the United States to transmit his views on legislation to Congress, it is absolutely contrary to law to use Federal funds for the purpose of influencing legislation pending before Congress.

We taxpayers are apparently employing individuals in the executive division of our Federal Government who at our expense are trying to influence the public to enact the Wagner-Murray-Dingell Bill, which will add thousands of employes and strength to bureaucratic Washington and will lead to deterioration of medical care in our country.

ASSOCIATED MEDICAL CARE PLANS

It was not until the December, 1945, meeting of the American Medical Association House of Delegates that our national organization gave its approval of voluntary nonprofit prepayment plans for medical care. The organized profession was slow to give its official approval to the Blue

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*Investigation of the Participation of Federal Officials in the Formation and Operation of Health Workshops. House Report No. 786, 80th Congress.

Cross, although many physicians felt that hospital expense was an insurable expense. The Blue Cross eventually proved its practicability and obtained the wholehearted support of the profession.

By December, 1945, some nine organizations had established nonprofit prepayment plans for medical care, the oldest statewide plan being the California Physicians' Service established in 1939. These organizations had formed an informal Council on Medical Care Plans, representatives of which met with the AMA Council of Medical Service in February, 1946, and formed Associated Medical Care Plans, an independent corporation. A few years ago there had been some talk of forming a prepayment medical organization on a national scale, but the idea was wisely abandoned.

The AMCP is governed by a commission of thirteen members, ten of whom are selected from persons directly associated with member Plans and three of whom are nominated by the AMA Council of Medical Service. Thus, while controlled by component members of the organization, AMCP is closely associated with the AMA.

On May 1, 1947, AMCP claimed thirty-nine members, and many additional units in the process of organization will doubtless be added in the near future, Minnesota Medical Service being one.

The AMCP has several important functions. It will assemble actuarial data which are essential for any insurance undertaking. This will be made available to the component units and to new organizations. Reciprocal arrangements will be made for exchange of membership privileges with a minimum of red tape. A mechanism is provided for selling the idea of this type of insurance to the medical profession, as well as to the public, on a national basis. Insurance, no matter how meritorious it may be, does not sell itself.

There is every reason to believe that medical insurance not only for the low-income group, for whom the organizations sponsored by the profession provides complete coverage, but also for those in the higher income brackets will grow by leaps and bounds, just as hospital insurance has. Members of the medical profession sold on the idea can act as publicity agents by urging their patients to buy medical insurance.

COMMUNITY CHEST

EACH year the 1,000 Community Chests throughout this country and Canada put on campaigns for raising funds for the 12,000 services they support. These campaigns take place each fall in the larger cities in Minnesota.

The idea of grouping the local services, which depend on the generosity of citizens, began sixty years ago in Denver, Colorado. This grouping of local activities affects an economy in the raising of funds, enables the contributor to give one sum yearly to a group of worthy activities instead of giving to them separately and does away with his not knowing how many he will be asked to contribute to nor how much he should give to each. He is also saved numerous calls from solicitors. Another advantage of the Community Chest idea is the apportioning of contributions by the Chest Budgeting Committee so that certain units do not suffer from lack of funds and others are not surfeited.

During the war, foreign relief organizations were combined with Community Chests thus providing the same advantages and economies. These affiliations were terminated last year.

The American Red Cross has never joined the Community Chest and, we think, quite wisely. The Red Cross has a special appeal, and its budget varies from year to year being enormously increased in war years and when other catastrophies strike. The organization's new undertaking of establishing blood banks on a nationwide and permanent basis is sure to prove a valuable but expensive undertaking.

The Community Chest idea is what we like to think of as a typical American institution. The majority of citizens dig into their pockets to support activities for the benefit of the communities. It is said that four out of ten individuals benefit directly from chest-supported activities. The other six undoubtedly benefit indirectly. The agencies which provide activities for children and the youth of the community and for the betterment of family life constitute a large part of Chest membership. With juvenile delinquency on the increase, nothing is needed more. Last year in our country 108,787 persons under twenty-one were arrested. Though this represents only 16.9 per cent of the total number arrested, it is a reflection on present-day trends.

Community Chest units are not all dispensers of charity. Many provide activities not charitable in nature. Community Chests deserve wholehearted support, because they make life better wherever they operate.

REPORT OF MINNESOTA AMA DELEGATES

This year, 1947, marked the 100th year of the organization of the American Medical Association at Atlantic City. The occasion was made especially notable by the visitation of noted medical representatives from practically every country on the globe, who brought to the convention offerings for the AMA, either from their national medical societies or their respective governments.

The meetings of the House of Delegates this year were somewhat more arduous than usual, and Mr. Delegate could find only two half days to visit the scientific session and none for the commercial exhibits.

There are several topics we would like to report on. First, the day of the general practitioner is here, and receiving more attention than usual. Last year a section was created for the general practice of medicine; suggestions were made that hospitals establish a division of service for the general practitioner. This emphasis was made necessary by the fact that many hospital staffs are dictated to by the numerous specialty boards. Second, the mid-year session of the House of Delegates will hereafter be held in various sections of the United States, two days being set aside, preceding the meeting of the delegates, for scientific sessions devoted to the general practice of medicine.

The nursing problem was another highlight, arousing much discussion, and the questions of practical nursing education and the shortening of nurses' training periods were brought up. It is apparent that too much stress has been put on technical and scientific preparation for the prospective student nurse rather than on her sympathetic understanding of problems in patient handling. We will hope for an attempt to bring about a solution by a joint committee of members appointed by the AMA, the American Board of Nursing, and the American Hospital Association.

A new section on chest disease was created, which, it is felt, will stimulate more knowledge on many obscure problems of the chest.

Problems of the Army and Navy regarding medical care in possible future wars resulted in the formation of a National Emergency Medical Service, which will undoubtedly not only change many medical problems resulting from World War II, but plans of civilian medical men. The next war, if and when there is one, will be an atomic war, and non-combat areas must be protected as well, if not better, than combat areas.

As a result of surveys made in 1946 by the AMA, it is generally agreed that affairs at the Home Office are gradually crystalizing into a far more efficient management. Dr. George Lull, general secretary and manager, is rounding out a very capable group of executives for the various divisions. The National Physicians Committee was again endorsed. During the past year they did a most excellent piece of work in Hawaii, when a bill to establish a socialized type of medical practice in the Hawaiian Islands was defeated.

The inability to secure paper, in addition to the inability to secure medical publications from abroad—a result of the war—is about licked, and you soon will see the Index Medicus on your shelves again. Also, the Directory of the AMA will soon be published. These are two very important publications.

The election of Dr. R. L. Sensenich of South Bend, Indiana, as President-Elect, was unanimous. Dr. Sensenich, an able executive, excellent speaker and a good internist with a keen grasp of AMA affairs, has the highest respect of the medical profession.

Frank Savage, M.D.
E. W. Hansen, M.D.
A. W. Adson, M.D.
W. A. Coventry, M.D.

WATER-BORNE TULAREMIA

(*Continued from Page 850*)

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TUBERCULOSIS AMONG RESIDENTS OF OLMSTED COUNTY OVER THE AGE OF SIXTY-FIVE

(*Continued from Page 859*)

ticularly since there was a definite overemphasis on persons receiving old-age assistance, but the finding of 8.6 per cent of this group with reinfection-type tuberculosis is certainly of immediate importance. In no other group of our population can we find such a high percentage of significant lesions.

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

DELEGATES DISCUSS HEALTH QUESTIONS AT DULUTH MEET

Use of an anti-tuberculosis vaccine, a plan for co-ordinating local health services, a program for stimulating public interest in heart disease and a cash sickness benefit system for railroad employes were among the several important matters to come up for discussion at the House of Delegates at its annual session in Duluth last month.

Physicians were urged to "proceed with caution" as regards inoculating patients with the widely popularized anti-tuberculosis vaccine, BCG. The House of Delegates passed a resolution opposing the indiscriminate use of this drug.

The new agent, whose full name is Bacillus-Calmette-Guerin, is prepared by suspending virulent tubercle bacilli in an innocuous liquid. The bacilli used for BCG are not as strong as some but are strong enough to produce tuberculosis.

Not Sufficiently Studied

No organized, thorough studies have been made to determine BCG's actual value in treatment or prevention of tuberculosis, the resolution pointed out. It further said that inoculation with BCG renders body tissues particularly sensitive to tuberculin and thus nullifies the value of the tuberculin test which has been used so effectively.

Further study of special groups under carefully controlled conditions with sufficient time to make the experiment worth while before its use is publicly advocated was deemed necessary by the delegates. The resolution deplored the widespread publicity given to the use of BCG for tuberculosis control work, which is leading to a feeling of security among our citizens. In Minnesota highly satisfactory results are being obtained by proved methods, as shown by marked reduction in mortality, morbidity and infection attack rates, and therefore every effort should be exerted to protect these results.

Health Council Plan Approved

A plan for the co-ordination of all health services and the bringing together for greater mutual understanding of all of the members of medical and allied health professions who provide health care and the citizens who receive the services was approved by the House of Delegates, as outlined in the report of the recently organized committee on Rural Medical Service.

As its answer to the various problems with regard to the distribution of medical and nursing services, hospital facilities, school health and health education programs and conflicting health campaigns, which can beset an individual community, the Committee proposed that a health council be organized at the local level to provide a chance for interchange of ideas and opinions leading to better understanding among those groups involved.

The health council idea is not a new one. Other states, notably Michigan, have formed them and have found them to be a sound, practical answer to much of the overlapping of services which can occur. These councils are formed first at the local level, in areas where they are deemed most advisable. Later a council can be formed at the state level, and eventually at the national level.

AMA Advocates Health Council Plan

Our State Committee on Rural Medical Service, which with the approval of the House of Delegates now has for its official project the formation of local health councils, was created by action of the Council of the Minnesota State Medical Association following a request of the American Medical Association. On January 4, 1947, the present Committee, with one representative from each of the nine Councilor Districts, was appointed by the Council; and Dr. Paul C. Leck of Austin was named Chairman.

The activities of the present Committee are co-ordinated closely with those of the parent committee of the AMA. At the two national conferences on Rural Health, sponsored by the AMA committee, there has been developed rather uniform agreement that health councils should be organized to enable professional and lay groups interested in health problems to meet together. The AMA Committee on Rural Medical Service recommends that these health councils be organized on a local, county or trade-area basis before state and national councils are developed. The national committee further urges that the medical profession show active leadership in organization of these health councils as a part of a program for extension of medical service.

Three Groups Represented

According to the proposals made at the National Rural Health Conference, health councils should be organized so as to represent three major groups concerned. First of all, there should be members of those allied and auxiliary professional groups who render health service; second, there should be representatives of the public-at-large who receive health service; and, third, persons representing governmental agencies manifesting a continuing interest in health and medical care should be admitted to membership in the health council.

Health professions to be represented would, of course, include doctors, dentists, nurses, pharmacists, and hospital administrators. The spokesmen for the public-at-large could be chosen from among the farm, labor, veterans', women's civic and professional organizations, parent-teacher associations and members of the clergy and church boards. Governmental agencies concerned would include the county welfare board, the county health unit, the city health unit, the city or village council and the sanatorium commission. Voluntary organizations, such bodies as the Tuberculosis association, the Infantile Paralysis Foundation, the Cancer Society, the Crippled Children's association and the Red Cross, should send their delegates.

Promote Discussion and Sound Planning

There are two major objectives of a health council: (1) to bring together the interested groups for the purpose of promoting discussion, debate and interchange of opinions and the sound planning of health and medical care programs and (2) to encourage, stimulate, foster and support the establishment of health and medical care councils in areas as deemed advisable within each state.

To obtain these ends, the councils could survey the medical and health needs, determining the existing and needed facilities and personnel for meeting the findings of such a survey; recommend ways and means of providing adequate facilities and personnel to meet the constantly changing needs; disseminate as widely as possible information pertaining to health and medical care problems and programs; and conduct or promote such meetings as may be helpful in effectuating the program.

Echoing the AMA's original appeal for the cooperation of the medical profession in the establishment of these health councils, which is so vital to their success, the Committee urged in its report to the House of Delegates that the local medical societies lend their support to the project by appointing committees on rural health in each society, to work with the State Committee.

The report pointed out that the very live interest in the rural health problem on the part of the public indicates the need for active leadership by the medical profession. It further warned that lay groups are prepared to proceed with their own plans if the active interest of the profession is not soon forthcoming.

Delegates Approve Heart Program

Recognizing the fact that a program to control a disease which is responsible currently for one-third of all deaths in the nation should not lack public and professional support, the House of Delegates approved a report submitted by the Heart Committee, which outlined plans for the establishment of a Minnesota branch of the American Heart Association.

The Heart Committee, of which Dr. Frank J. Hirschboeck of Duluth is chairman, reported that it had been planning during the year to expand its efforts toward activating public interest in heart disease. At the request of the American Heart Association, the Committee has held several meetings to consider plans for the formation of a Minnesota Heart Association. Dr. Hirschboeck appeared before the Council of the Minnesota State Medical Association and requested its approval for the Heart Committee to petition the American Heart Association for a charter for the Minnesota branch. This approval was granted and the Committee has since been considering the question of membership.

Present plans are based on a recent change in policy of the American Heart Association, the delegates were told. At first the AHA was interested only in scientific matters, research and education of physicians. Under the new policy, the AHA plans to broaden its scope of activities, to concentrate more on public health education. And in order to foster this program for the spread of information and the development of public interest, it is proposed by the AHA to have sectional or state Heart associations formed.

Members Include Physicians and Laymen

It is planned to extend membership not only to physicians but to members of other professional groups and to laymen, lay membership to be limited to less than fifty per cent of the total. The Committee noted in its report that Minnesota supplies a very satisfactory field for the formation of a Heart association chapter, since in this state the interest evidenced in heart disease has been as intensive as in any other community in the United States, if not more so. The interest of various organizations, such as the Minnesota Public Health Association, the American Legion, the Variety Club, the Alpha Phi sorority, and several others, has long been known. All have indicated their interest and willingness to do their share in advancing a definite research and education program. The Minnesota Heart Association will seek to co-ordinate and encourage the activities of all of these organizations.

An early meeting with representatives of the medical profession, interested allied professional groups and laymen is planned, at which time definite action for the formation of the Heart Association will be discussed.

Hear Railroaders' Benefit Plan

A cash sickness benefit system for railroad employes which became operative July 1, and which will require the close co-operation of physicians, was explained to the House of Delegates by representatives of the Railroad Retirement Board. Benefits, the delegates learned, are payable under the Railroad Unemployment Insurance Act to qualified railroad employes when they are unable to work because of sickness or injury. Physicians are concerned in the program since in order to receive benefits an employe must submit a statement of sickness signed by his physician.

Only doctors of medicine are authorized to sign statements of sickness except when information furnished on the form is derived from current records of hospitals or institutions, in which case the hospital superintendent or institutional head may sign the statement.

Need Complete, Accurate Information

The need for complete and accurate information as called for by each item of the form was stressed in the report to the delegates. It is also expected that the doctor will enter an estimate of the date on which he believes the employe will have recovered sufficiently to resume work in his last occupation.

All disabilities which prevent railroad employes from working, regardless of how or where they occur, are covered under the program. It is estimated that the program will require about 650,000 medical examinations a year. Employes are free to choose their own doctors; and, since the Retirement Board is not liable for any charge in connection with completing the statement of sickness, the relationship between the doctor and the patient is not affected by this program.

There are two forms on which doctors are to provide medical information. The first, which is intended primarily for information at the beginning of an illness or disability, is the "Statement of Sickness." The second, intended to provide additional information when it is needed later on in connection with the same illness, is the "Supplemental Doctor's Statement."

Prompt Mailing Required

The form to be filled in by the employe in applying for sickness benefits and that to be filled in by the physician are combined on the application form, but if the physician considers the information he is entering to be confidential, that part of the form can be detached and mailed by him direct to the Board's Regional Office. Prompt mailing of the employe's form and the doctor's statement is very important. If mailing is delayed, the employe may lose benefits to which he is otherwise entitled.

Any employe who earned $150 or more in railroad employment during a calendar year is eligible to receive benefits if he applies for them

(Continued on Page 902)

Minnesota Academy of Medicine

Meeting of March 12, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 12, 1947. Dinner was served at 7 o'clock and the meeting was called to order by the president, Dr. E. M. Hammes, at 8 p.m.

There were forty-one members present.

Minutes of the February meeting were read and approved.

The secretary read a letter from Dr. H. Z. Giffin presenting his resignation from the Academy. However, upon motion, it was voted unanimously to place Dr. Giffin's name on the Honorary List of the Academy, and the secretary was instructed to notify Dr. Giffin of this action.

The scientific program followed. Dr. Harvey O. Beek, Saint Paul, and Dr. Vernon L. Hart, Minneapolis, each read an Inaugural Thesis.

EDUCATIONAL MANAGEMENT IN PSYCHOSOMATIC MEDICINE, WITH SPECIAL REFERENCE TO THE GASTROINTESTINAL TRACT

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The purpose of this paper is threefold: (1) to call attention to the psychosomatic problem, especially in its relation to certain diseases of and symptoms of the gastrointestinal tract; (2) to advocate and define the concept of educational management in the treatment of these cases; (3) to present cases illustrative of this common problem and their management.

Psychosomatic medicine changes the traditional concept that disease is a fixed pathologic state. The traditional view, based on the precise pathologic studies of Virchow, explained the symptoms of disease as being a result of pathologic tissue changes which could be traced back to certain mechanical, chemical, or infectious factors, or to the natural process of aging. Psychosomatic medicine recognizes that certain symptoms and pathologic anatomical changes are the consequences of disturbed organ function which is associated with chronic emotional conflicts.

According to Fultons' belief, visceral changes are secondary to the mental state or neurosis, that positive mental and emotional states, concomitant with activity of the cerebral cortex, are accompanied by visceral changes also arising from cortical excitation. Another view supported by psychological data suggests that the visceral activity indicates a concomitant psychological vector, and that the neurosis is both mental and visceral change, and that they are inseparable.

It has been noted for a long time that functional disorders of long duration may gradually lead to serious organic disorders based on anatomical change. Common examples of this are the hyperactivity of the heart with resultant hypertrophy of the heart muscle, or hysterical paralysis of a limb which may lead, due to inactivity, to certain degenerative changes in the muscle. With the development of the psychogenic concept it has become evident there can be no sharp dividing line between functional and organic.

Alkan in 1930 was one of the early leaders to point out that organic disease could properly be studied by psychologic methods. According to his belief organic changes may be the final result of emotional disturbances within the field of the autonomic nervous system. He postulated that intrapsychic conflicts may be expressed by spasms of smooth muscle which secondarily lead to anemia of an organ, vascular stasis, dyskinesia, atrophy or infection. The result of this may be organic changes in visceral tissue or somatic structures, which of themselves, as terminal events, are irreversible and constitute the so-called organic disease.

Alexander and his group, through their psychoanalytic studies, have become convinced of the psychogenic origin of gastrointestinal disorders. It is their belief that the organic changes are the last link in a complicated functional chain of events with psychologic conflicts as the basic etiologic factor.

Intensive psychic and somatic studies of cases of peptic ulcer have produced marked evidence for the assumption that emotional conflicts of long duration may be the first step to a stomach neurosis which may result in an ulcer. Present electroencephalogram studies on ulcer patients are adding to this evidence by correlating the electroencephalogram findings with the personality study.

Claude Bernard indicated the importance of the maintenance of a stabilized internal milieu of an organism for its normal existence. The autonomic nervous system has the major role in the maintenance of this condition. Forces pulling in the opposite direction are equilibrated to give an appearance of the rest homeostasis of Cannon. An automatic response involved in the interest of homeostatic balance or as an expression of emotional behavior may become excessive and give rise to symptoms.

Emotional conflicts and abnormal tensions that cannot be expressed outwardly through normal channels are converted to symptoms and organic disease. These emotions become the source of excessive energy which, centered in the hypothalmic region, overflows on the nuclei of the autonomic nervous system. The diencephalon with its regulating influence upon both major divisions of the vegetative nervous system apparently serves as the distributor of the emotional components of disease. The cerebral cortex appears to transmit, under conflict and abnormal tension, stimuli to the area in

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Inaugural thesis.

the diencephalon which sets up impulses responsible for secondary changes in function and structural change.

Grinker and Ingram have reviewed the evidence that there are controlling nuclei for the sympathetic and parasympathetic nervous systems in the hypothalmus and that these centers are not only under the controlling influence of the hypothalmus, but also of the hypophysis and cortex. Stimulation of the hypothalmic region will cause various sympathetic or parasympathetic responses which will disappear when the vagus or sympathetic nerves are cut. It is postulated that the tonus of the two nervous systems is regulated in the area, and it is apparent that emotional tension can affect either one or the other separately or both simultaneously.

The manifestations of disturbed autonomic nervous system are numerous and this discussion will be limited to the gastrointestinal tract.

It was the experience of the medical corps in the recent war that gastrointestinal manifestation replaced the "soldiers heart" of World War I. In my practice, in a charity clinic, and in an educational therapy class, it is by far the most common condition.

1. In my private practice 25 per cent of the patients seen have complained of gastrointestinal symptoms which have been diagnosed as functional.
2. In a charity clinic figures based on samplings showed approximately 40 per cent with these complaints.
3. In an educational therapy class of 150 members, 36 per cent gave gastrointestinal complaints as their main problem.

There is probably no other system which shows such fine shadings between functional and organic changes as the gastrointestinal tract. Long-standing emotional disturbances result in tissue changes as seen in the stomach, duodenal ulcers and the ulcerative lesions of the colon.

There are certain factors which contribute to making this area a logical endpoint for emotional tension: (1) the sheer length of the tract; (2) the abundant afferent and efferent nerve supply of the gastrointestinal tract; (3) the association of relief from physical discomfort; (4) the fact that it is subjected to a wide range of abuses and insults; (5) the demands made upon it for adjustment and accommodation; (6) the association of the tract—through the act of feeding—with the emotions.

Wolf and Wolff have shown in their monograph, "Human Gastric Function," that the gastrointestinal tract is a battle ground for conflicts between the body and the emotional state. They demonstrated that alterations in gastric function may occur in response to a very large number of stimuli, and that even in the case of drugs and other physical and chemical agents, the usual effects may be profoundly modified or even reversed by changes associated with the situation in which the subject found himself and his reaction to it. It was further shown that these functional alterations in the stomach, when sustained, lead to the appearance of distressing symptoms and structural damage.

In a group of 158 patients attending an educational therapy class the most prominent emotions found to be the apparent causative factors of the tension state were first, fear and anxiety, and next, hostility and resentment.

Wolf and Wolff's subject again demonstrated well the changes in the stomach in response to these emotions. Fear, giving a picture of pallor of the face with blanching of the mucous membrane of the stomach accompanied by reduced acid secretion; anxiety, showing hyperemia, hypersecretion, and hypermotility, with flushing of the face; hostility and resentment showing turgidity, engorgement, hyperacidity, and violent contractions. Sustained emotional tension revealed the changes in the stomach mucous membrane and the patient complained of cramps and diarrhea. The sensitivity of the stomach to pain from vigorous contractions increased at the times of hyperemia and engorgement.

The cases to be presented and discussed are given because:

1. The emotional and life situation of the patients is a dominating factor in their illness.
2. They are all cases with sustained emotional tension.
3. All cases showed more than one manifestation of autonomic nervous system imbalance.
4. In each case the emotional component was easily accessible.
5. All cases had failed to respond to accepted medical management.
6. They did respond to either educational management alone or the addition of educational management.

Case Reports

Case 1.—(Ulcer-like Syndrome) J. W. T. aged fifty-five, a married white man, was first seen in May, 1946, complaining of gas, gnawing sensation in the epigastrium, intolerance of many foods, weakness, and stating definitely that he had an "ulcer." He also complained of spells of rapid heart, fatigue, sweating, and "collapse." His symptoms first appeared in mild form between 1932 and 1934, and since then have been the focus point of his life. During this period he had seven gastrointestinal x-rays series, and two gall-bladder x-rays. One x-ray examination supposedly showed a small ulcer in the duodenum. A retrocecal appendix was removed in 1942. He failed to respond to the large number of sedatives, antispasmodics, diets, and interval feedings which his physicians tried. An attempt was made by a surgical consultant to explain his condition on a functional basis, but this he absolutely refused to accept.

When seen in May, 1946, he was hospitalized and kept on modified ulcer diet while an attempt was made to start educational therapy. This failed and he was discharged in five days. His symptoms continued and he spent a great deal of the summer in bed. In September he was again hospitalized, but again he refused to accept educational therapy and was discharged at the end of seven days. On October 9, he had such a severe attack of distress and tachycardia that he was returned to the hospital, where x-ray studies failed to reveal an ulcer. According to his statement he had reached such a low ebb that he was willing to try anything. From the moment that he was willing to admit his condition was functional and was willing to accept educational therapy, his progress was one of steady and rapid improvement. He was discharged from the hospital on October 30, on a normal diet, no medication, no activity restriction except the avoidance of excessive fatigue. He has continued to the present, free from distress, and has not missed a meal or work day in six months, a record that had not been achieved in thirteen years. He is able to eat any foods, and does not avoid moderate amounts of alcohol. Under strain he does have mild spells of tachycardia and some "tight sensation" in the stomach, but he is able to break this immediately with the relaxing exercises that he has been taught.

The history revealed that the symptoms began during the depression years while the patient was guiding a financially unsound business. He is of Irish decent, of an explosive nature at times, and not given to controlling his emotions.

This case history shows a patient who for a period of fourteen years failed to respond to medical management for gastrointestinal complaints. With his improvement he realized that, after all, his condition was functional and that the advocated educational therapy did make sense. He also admitted that he had always hoped for some definite organic finding and that he had pounced on the one questionable x-ray with great hopes, but that the failure of diet to cure him had been a disappointment. This case well illustrates the change from medical management to educational management.

Case 2.—(Gastritis) E. G., aged twenty-three, an unmarried Mexican woman, was first seen in January, 1946, complaining of nausea, burning in the epigastrium, loss of weight, gas, distress after eating, and fatigue. These symptoms had a duration of six years with varying degrees of intensity. She also complained of spells of sweating, palpitation, and dizziness for three years.

During the period of six years she had been seen by seven different private physicians and had failed to respond to any of the types of therapy given.

The only significant findings on examination were spasm of the gastrointestinal tract and moderate tenderness in the ileocecal region. The x-ray examination showed a rather large stomach containing an excess of secretion and slight changes suggestive of gastritis.

She was treated intentionally as an out-patient on medical management until May, 1946, and continued to have the same complaints with no signs of improvement. In May, 1946, she was hospitalized for one month for strict medical management. There was no change in her symptoms or x-ray findings after this period. No attempt was made to get a history of her emotional situation.

In August, 1946, a detailed life and emotional history revealed that her father had become a drunkard and when she was nine, a brother took to drinking with resultant family drunken brawls. She had noted the appearance of a tight feeling in her stomach as the household tension developed, which was accentuated by each violent episode. Her brother was convicted of "white slavery" and at this time her symptoms increased and became permanent. She refused to marry a boy whom she was really fond of shortly before he went overseas. He was soon killed, and her symptoms became more marked. She had been unable to work for two years because of her distress.

She was of average intelligence and desired to raise herself above the level of her family.

After educational management was started in August, she responded slowly but well, and in two months was able to eat nearly all foods without distress, gained 5 pounds and obtained a position.

She gained sufficient understanding so that she volunteered that she could correlate her mother's asthmatic attacks with the home situations, and that she felt this asthma was of the same functional nature.

In this case it is seen that the patient failed to respond to treatment over a six-year period with seven different physicians. It is to be noted that no adequate history was taken during this time. This patient failed to respond to medical management as an in- and out-patient over an eight-month period, but did respond when educational therapy was started and the emotional aspect of her condition explained. This patient is still being followed.

Case 3.—(Duodenal Ulcer) E. M., aged fifteen, an unmarried negro girl (illegitimate), was first seen in September, 1946, complaining of gnawing pain in the epigastrium, nausea, vomiting, sweating, and weakness. These symptoms had been persistent for two years.

The patient was said to have had stomach distress ever since she was an infant. At the age of nine, her condition became more marked and she was taken to various clinics where the diagnosis of nervous stomach, gastroenteritis, and food intolerance were made. In September, 1945, because of a severe attack she was given a gastrointestinal x-ray at a city hospital, and a shallow ulcer crater about ½ inch in diameter was found on the posterior wall of the middle third of the cap of the duodenum. She was placed on diet and Sippy powders with only moderate relief. In September at another clinic she had an x-ray study and the findings were reported as showing an active ulcer with associated gastritis. She was continued on the same diet and also started on educational therapy. One month later she showed decrease in the size of the ulcer crater, and her improvement has continued. X-rays taken February 15, 1947, showed no signs of an ulcer crater.

In obtaining the history of her family and emotional life it was found that this had not been done before. The important points in the history revealed that she believed her father had died shortly after her birth. She lived with her mother, grandmother and aunt. There was constant friction in the home, which the patient realized caused her stomach to be upset. When she was nine her mother married a man whom she feared, and who refused to support and rejected the patient. At this time she had a severe attack of stomach pain and vomiting. She lived with her aunt. With the birth of each of two half-sisters she developed severe attacks and had to be taken to clinics. When she was fourteen she had her severest attack. This followed an attempt by the Welfare Board to urge her to return to her mother and stepfather and she lived for a period in fear that this might be brought about. It was at that time the ulcer was found.

This case reveals a fifteen-year-old Negro girl in whom a definite ulcer had been recognized for one year. It had not responded to medical management, in the year, but did respond when educational therapy was added to this regime. The periods of exacerbation of her symptoms are easily correlated with the increase in the emotions of fear, anxiety, and resentment.

Case 4.—(Duodenal Ulcer) R.R., aged sixty-two, a married white woman, was first seen in November, 1946, complaining of typical ulcer symptoms, insomnia, and restlessness. She stated that she had been on ulcer regime of restricted diet and medication for twenty years, and that she had not been free of chronic distress during the last fourteen years.

X-Ray studies on November 4, 1946, showed an active duodenal ulcer with marked deformity.

She was continued on medical regime and educational management started. She soon experienced relief and on November 18, 1946, the x-rays showed marked improvement with no evidence of the previously demonstrated ulcer crater.

The history revealed this person to be a chronic worrier, with marked periods of anxiety.

This patient has not been followed very long, but she is enjoying more comfort than in the past fourteen years and has recently gone through a period of distress caused by a tragic family death, which she states should have made her stomach symptoms almost unbearable. As in the other cases the only change in treatment was the addition of educational management.

Case 5.—(Ulcerative Colitis) G. L. D., aged forty-five, a married Jewish woman, was first seen in August, 1945, complaining of bloody diarrhea, tenesmus, abdominal cramps, weakness, loss of weight, insomnia, fatigue, and dizziness, and sweating. Her first symptoms appeared as mild cramps and diarrhea in 1934 and increased in severity until 1941 when her physician made the diagnosis of ulcerative colitis. She was placed on various medical regimes until August, 1945, when she was referred to a surgeon.

Proctoscopic and x-ray examinations confirmed the diagnoses. Examination showed marked abdominal tenderness and moderate rigidity.

Emotional history revealed financial insecurity, numerous family conflicts, anxiety over her husband and children, one of whom was a marked behavior problem.

She was hospitalized from August 28 to December 16, 1945, on medical management and educational therapy. She made slow and steady improvement. After her discharge she continued educational management until April, 1946, when she returned to her home in Detroit to face unchanged conditions. She was able to do this and handle difficult situations without an exacerbation, and recent letters state that she is doing well at the end of one year.

This case is of importance because it shows a typical case of ulcerative colitis which was referred to a surgeon for operation. The surgeon recognizing the emotional component placed the patient on educational management, instead of surgery.

Case 6.—(Diarrhea) G. M., aged forty-two, a married white woman, was first seen in October, 1945, complaining of occasional diarrhea, abdominal cramps, tachycardia, and dizziness. Her symptoms had been present three years.

Examination was negative except for marked spasm and tenderness of the lower gastrointestinal tract.

History showed she had married a man twenty years older than herself. When she discovered that he drank, her symptoms appeared. She found that the sight of a drunken man or the act of merely walking by a parlor seeing people drink would bring on a violent attack of diarrhea. She had failed to respond to diet and sedation but did respond to educational management and is free from diarrhea.

This case furnishes a good example of the reflex action established by emotion, the strong feeling regarding drink. It appears as a potential case of ulcerative colitis without educational management.

Comment

It is interesting to note that, in a number of ulcer patients from the same group now being studied, the figures show that patients on continued educational management after cessation of the ulcer regime are less likely to have recurrence of symptoms, than those in whom this therapy is not used, the medical management in these cases being modified ulcer diets and antiacids, or protein hydrolosate.

In none of these cases reported was a glucose tolerance study made, but in some of the group this is being done, and a low curve with a two-hour drop to 55-60 mg. is being found, the degree depending on the severity of the emotional problem. This is consistent with the studies made on psychoneurotic soldiers.

Accepting one of the theories advanced for the role which the autonomic nervous system plays in the production of these conditions, it is easy to understand why the usual medical management of these patients fails. Once the emotional state has caused the regulating mechanism to respond in this altered manner, and established an emotional reflex, the condition cannot be changed until the emotional component has been corrected. The re-establishment of the emotional-autonomic nervous system relationship is the purpose of educational management.

Recognizing this conflict or tension pattern, the internist has been criticized for not more frequently seeking psychiatric consultation in the handling of these cases. It is felt that this consultation is impossible because of the terrific case load, and that in the majority of cases it is not necessary but might be unwise treatment.

Educational management as advocated is a means for handling these functional problems which is within the reach of any physician or surgeon who is willing to take the time with his patient, and who is willing to devote himself to understanding the emotional state and response of his patients.

These patients are suffering from a condition which is due to their own emotional response to situations and their condition is usually accompanied by a general state of tension. A study of a group of patients in an educational management class showed that nearly all of them had more than one manifestation of autonomic imbalance such as sweating, tachycardia, dilated pupils. They must be made to understand their problem, the importance of the emotional involvement, and the association of relaxation.

Patients before being elegible for this form of therapy must be thoroughly studied and all complaints investigated. There must be no doubt in the mind of the examiner as to what the patient's condition is. Any doubt about the mental status of the patient has to be evaluated by a psychiatrist. It has been pointed out that the problems of these patients must be simple and on the surface.

Educational management is exactly what its name implies, education in understanding oneself and one's problems, and that most important tool, relaxation. The program must be carried out by developing the two phases at the same time.

The patient should be presented with the results and facts of the examination in a manner any intelligent person is entitled to. Any doubts about his condition or questions pertaining to it must be satisfied. A patient whose attitude is "Yes, Doctor, but" will not respond as long as he maintains that attitude. The best results are obtained in group management, although a modified program can be carried out individually. In attending a group the individual gets things that he cannot when handled alone. He quickly grasps certain very obvious facts. The presence of many others assures him that, contrary to his belief, he is not the only person in the world with a functional problem. The most important step is in making the patient realize that his ailment is just as real as a definite organic disease, in making him see that there is no more shame, stigma, or disgrace in admitting he has a functional condition, than there would be in admitting he had a broken leg or diseased heart. In the group he learns that functional conditions are not respectors of persons, that they may plague the rich as well as the poor; those of higher intelligence levels and those of lower; the laborer and the man behind the desk. In the group he has the opportunity to watch the progress of other individuals in the conquer-ing of their problems; he has the opportunity of talking with them and learning at first hand of their progress and does not have to rely on the statement of the physician. This is one of the extremely valuable facts in developing his confidence. He learns that the physician and the group furnish him tools, but that he alone can get himself out of his difficulty. It is made clear to him that his group attendance is not compulsory, that he must want this type of therapy, that the results depend on his desire to get well.

In the group his educational process consists of showing him, by means of discussion in simple language, something of the physiology and anatomy of the body. He has to learn that emotions can, through a chain of events, be converted into changes in function that may even result in a structural change which produces his symptoms.

As important as understanding the effects of emotions is understanding the art of relaxation. This is taught at the same time by having the group follow the physician through a simple series of exercises. The principle of these is the simple contrast between tensed and relaxed muscle groups, and a simple form of mental relaxation.

The patient is encouraged to discuss openly in the group his problem and his progress in handling it.

These patients are taught not to believe that all conditions are functional, that organic and functional can coexist, that while they may have a functional condition they may acquire some other, and that new symptoms must be explained by their physician.

A question has been raised as to whether or not this form of therapy is not an encroachment on the field of psychiatry. It is felt that it is not. There is no attempt made to interpret dreams, to use uncovering technique, psychoanalysis or any other procedure which rightfully belongs to the trained psychiatrist.

The statement has been made that because of its simplicity this type of therapy could be abused. That is correct. It could be degraded into a series of pep talks and a modified form of "laying on hands." If abused, it could be very dangerous. Intelligently used, it appears the ideal solution for handling a great many functional cases.

The cases cited are from an educational management group in Saint Paul, and opinions expressed about this therapy were formed in the management of this group.

In summary it is felt that educational management is a definite form of therapy in the field of psychosomatic medicine, and that the problem of handling these patients resolves itself into that of handling the whole man rather than his ulcer, gastritis, or colitis.

A British doctor, Crookshank, stated, "It always seems to me odd in the extreme that doctors, who, when students, suffered with frequency of micturition before an oral examination, or who when in France had actual experiences of the bowel looseness that occurred before action, should persistently refuse to seek a psychological correlative—not to say an etiological—factor when confronted with a case of functional enuresis or mucous colitis. I often wonder that some hard-boiled and orthodox clinician does not describe emotional weeping as a 'New Disease,' calling it paroxysmal lacrymation, and suggesting treatment by belladonna, astringent, local applications, avoidance of sexual excess, tea, tobacco, fluid intake; proceeding, in the event of failure, to early removal of the tear glands. Of course, this sounds ludicrous. But a good deal of contemporary medicine and surgery seems to me to be on much the same level."

Discussion

Dr. Moses Barron, Minneapolis: Dr. Beek's paper was a very instructive one. He touched upon a field in medicine that is not sufficiently emphasized in our medical schools. I have always felt that it is very important to obtain a careful history from the patients so as to get a proper background in devising treatment. I myself have used a similar method in the care of my gastrointestinal patients to which I do not give any name such as education. I simply consider it as a method of getting the co-operation of the patient in carrying out the treatment. I have tried to emphasize this approach to the students and have insisted on careful histories of the patients. In the treatment of ulcers, for example, I carefully go over the entire field of management with the patient, pointing out the importance of regulating the diet, the reason for certain foods being used, the reason for the various medicines used, and just what we try to obtain by the management.

The importance of the psychic factors is always emphasized, the importance of eliminating tension and excitement. I have found the procedure a very satisfactory one. We realize that about 40 to 50 per cent of our patients have complaints with no organic basis that can be demonstrated. As Dr. Beek has well said, the complaints and symptoms, whether organic or functional, affect the patients just the same. They suffer just as much and often more from functional ailments than they do from definitely organic lesions. A careful discussion with the patient will help toward an understanding of just what is involved and will bring about better results in treatment.

Dr. C. N. Hensel, Saint Paul: I am very glad to rise to my feet and give commendation to Dr. Beek for bringing this topic before the Academy.

I have been a member of this organization for some thirteen years, and this is the first time I can recall such a topic being presented here.

In view of so much stress being presently given to psychosomatic problems, I think it is a very timely subject and very well presented. In my training as a medical student I was indoctrinated by the force of the pathological thinking of that time, namely, that unless you could find a lesion in an organ during life or at the autopsy table after death, no disease existed. Therefore, after graduation and in my early years of practice, I sought for the pathological lesion, applied the proper treatment and expected the patient to get well.

When patients did not improve or get well, I was disappointed and I then began to investigate further and inquire what was wrong. Often I would discover that, in addition to their complaints of sick organs, these patients were carrying a flock of bothers and troubles, that they had not mentioned when I first obtained their history; and so, without any training in psychoanalytical technique, I attempted in a practical common-sense way to resolve some of these bothers. If I was successful in so doing, then these patients seemed to improve, and so I became interested in the relationship of emotions and feelings to disease.

Thereafter when a medical problem would not be resolved by medical management, I would inquire further and sometimes I obtained a frank discussion by the patient; more often, I would be met by evasion or denial that there was anything wrong emotionally in the patient's life.

After repeated conferences, I might uncover factors that were denied at the first visit. Personal pride and an instinctive sense of protecting one's weaknesses or inadequacies, seemed to be the greatest hindrance in preventing such patients from freely discussing their basic problems with the physician. And so, in order to relax that pride, I would assume that certain problems (which I had already come to suspect) existed in that patient's life and proceed to discuss them as though they were facts. With this lead, uncommunicative patients might begin to talk about their problems and thus find relief from inner tensions. I am convinced that it is either pain or fear which most often drives patients to their doctor. The pain motive is definite and tangible, usually localized and inevitably leads the doctor to the proper diagnosis and treatment. The fear motive is usually hidden and the patient is unable to express it; often such patients come with some unrelated complaint, hoping, perhaps, that in the course of the examination the doctor will discover whether there is a cancer of the uterus or the stomach or whether the palpitation of the heart is serious.

Many patients who consult a doctor are inadequate to their life's situation, are unable to cope with their problems, and they become dissatisfied with what they are doing and unconsciously resort to perpetual complaining as sort of an excuse for their inadequacy. To such people the doctor must be not only their physician but their guide and leader who helps them with their problems. You cannot obtain an informative history from such patients in ten or fifteen minutes; you must let these people talk and tell their story in their own way. Confessions are made slowly and painfully and take time if you are to obtain the crux of what is bothering the patient. If you choke them off as too time-consuming or discursive, you drive back deep within them the trouble which is seeking an outlet. Such patients need understanding, and a kindly guiding hand to help them with the revelation of their problem which oftentimes they are aware of themselves, but too shy or too ashamed to reveal to others.

Dr. Beek has chosen the educational class method because it saves time and he can deal with a larger number of people with the same expenditure of effort. For myself, I have liked the person-to-person relationship and felt I could secure better results in this way. Whichever method you have used and found best, you yourself can use best. I can recall an oration by Dr. Cannon, of Boston, at a meeting of the American College of Physicians in 1938 on "The Role of the Emotions on Bodily Functions and Disease," in which he deplored the fact that medical teachers were still bound by Virchow's ideas on cellular pathology and Freud's ideas of the unconscious. He felt that medical schools should put more stress on emotional factors in the study of disease.

Dr. Beek (in closing): I want to comment on one of the things which Dr. Hensel mentioned; and that is I do not wish to create the impression that the individual is forgotten. We must have some personal contact with them and that is done at other times than in the class. We must maintain personal contact with our patients.

CONGENITAL DISLOCATION AND CONGENITAL SUBLUXATION OF THE HIP

Etiology and Roentgenographic Features

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Congenital dislocation and congenital subluxation of the hip joint are two separate and distinct clinical entities and each may be the cause of serious disability. The two conditions should be considered together because they have the same etiology.

Classical congenital dislocation of the hip is secondary to a primary genetic dysplasia of the hip, or flat acetabulum, and develops during intra-uterine life, or in the course of the first or second year of postnatal life. Dislocation is a consequence of the primary dysplasia or "flat socket"; it is a secondary and incidental phenomenon. "Dysplastic acetabulum" is a term now generally accepted, and means a congenital and genetic anomaly of the acetabulum, with hip-joint instability and incongruity. The primary anomaly is not limited to the acetabulum, but involves all mesodermal structures of the hip joint. Aplasia or hypoplasia of the roof or buttress of the rim of the acetabulum causes a flat socket which is the important expression of the dysplasia of the pelvis and hip joint. Dislocation of the femoral head may result because the hypoplastic and insufficient roof of the acetabulum lies in the axis of transference of forces of body weight and muscle contraction. Acclivity of the roof of the socket is the principal anatomical feature and a constant defect in congenital dislocation of the hip (Fig. 1).

Actual dislocation can, but need not necessarily, occur. Primary dysplasia of the hip without dislocation, but with varying degrees of subluxation, is a distinct clinical entity. The two entities, with and without dislocation, are identical in their etiology but are different in their clinical, radiological and pathological manifestations. Either entity may exist as a unilateral or bilateral lesion of the hip joint; frequently the two entities are present in a single patient with bilateral hip-joint dysplasia (Fig. 2).

Hip dysplasia with potential dislocation in a child one or several months of age may, if not properly treated, become a complete dislocation before or soon after the child starts to walk. Dysplasia of the hip with dislocation was at some previous period a potential dislocation; but hip dysplasia without dislocation does not necessarily progress to a complete or classical dislocation. Whether or not a gradual transition occurs from potential to complete dislocation depends on the degree of hypoplasia of the acetabular rim, the sex, the position *in utero,* and the forces of muscle contraction and weight-bearing. It is now an established fact that dysplasia of the hip with subluxation, which was thought to be only a precursor of the classical dislocation, may remain as a permament deformity with characteristic clinical symptoms and roentgenographic findings.

Inaugural thesis.

In the textbooks, the chapter on congenital dislocation of the hip is incomplete, since only the entity "dislocation" is considered. The entity "subluxation," which is more common, and frequently more disabling than the classical dislocation, should be included. The terms "dysplastic acetabulum" or "hip dysplasia without dislocation," "preluxation," "potential dislocation," "inadequate acetabulum," "incompetent acetabulum," "flat socket," and "subluxation" are synonymous, since they are expressions for a single entity.

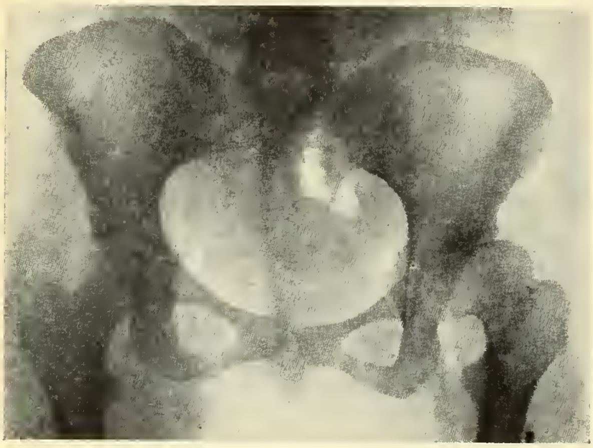

Fig. 1. Roentgenogram of patient twenty years after manipulative reduction of congenital dislocation of the left hip. Note that the principal anatomical feature and constant defect in congenital hip is acclivity of the roof of the acetabulum. The patient is now twenty-five years old. There is no evidence of traumatic arthritis which is inevitable at a later age. Secondary roentgenographic features of maldevelopment of the femoral head and neck are apparent; also the adaptive physiological sclerosis of the roof of the inadequate acetabulum.

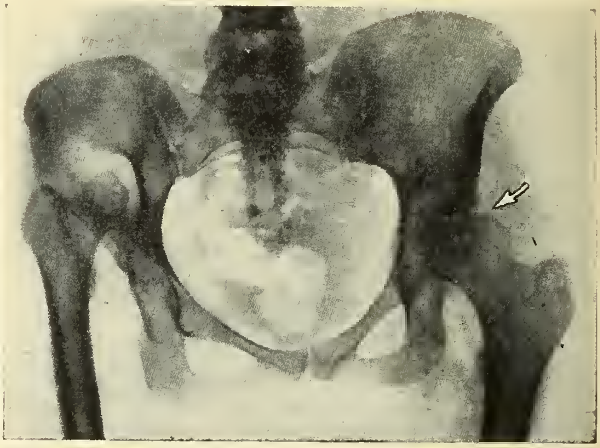

Fig. 2. Patient has always heen disabled with a unilateral hip dislocation. She is now forty-six years old, and has experienced pain and stiffness during the past year in the opposite "normal" hip. Note the characteristic signs of primary hip dysplasia of the "normal" hip with early traumatic osteoarthritis. Careful study of dysplastic acetabula shows that bilateral cases outweigh the unilateral, which is the opposite of statements made by earlier authors.

Heredity Conditions

Many authors have reported genetic occurrence in families in about 20 per cent of all cases of congenital hip dislocation. A notable and fundamental contribution to our knowledge of congenital dislocation of the hip was reported by Faber in 1937. Previous to Faber's work, all genetic investigations were based on the concept of a "dislocation gene" or diseased chromosome. The only "patients" in the genealogical studies were those with classical dislocation. Faber's research was based on the concept that the heredity, upon which dislocation of the hip depends, is not itself the hip dislocation, but, instead, is a primarily existent defect or acetabular anomaly which is in general designated as a flat socket. Because of a flat socket, an actual dislocation of the joint can, but need not necessarily, occur. There is no "dislocation-gene-conditioned chromosome," but there is a "hip-dysplasia gene." The hereditary factor is not the dislocation, but is a primary hip and acetabular dysplasia. Congenital hip dysplasia with dislocation and with subluxation are clinical expressions of the same gene-conditioned chromosome. They have the same heredity.

Roentgenographic consanguinity investigations were made by Faber on all living members of the families of ten children with congenital dislocation of the hip (Fig. 3). The ten children were considered ostensibly sound in their heredity by those who accepted the concept of a "dislocation gene." From these studies, Faber demonstrated that dysplasia of the hip joint without dislocation was three times as frequent as was classical hip dislocation. In a total of ninety-eight cases of primary hip dysplasia, twenty-five were with dislocation and seventy-three without dislocation. The occurence of primary acetabular dysplasia is, therefore, four times as frequent as had been supposed up to the present time, from the sole consideration of hip dislocation. In some of the families, only a few individuals manifested classical dislocation, while many showed hip dysplasia with subluxation. In one family, no dislocation was observed although many flat sockets were demonstrated. Not all apparently normal individuals were genetically sound. Some patients with hip dislocation had parents who were normal in (phenotype) appearance, but roentgenographic studies showed one of the parents to have a flat socket. The affected parent, although clinically normal, was a latent carrier of the gene.

Variations in the manifestation or expressivity of the gene indicate that other conditions are active in determining the penetrance of the gene, and thus the expression of the character. Under the influence of function, a growing child with hip dysplasia without dislocation may in adolescent or adult life present a spontaneously healed or normal hip joint; the apparently normal individual would be genetically abnormal and a conductor or latent carrier of the "hip-dysplasia" gene. In many instances, it is not possible to measure the exact environmental condition which can affect the gene action. Genes primarily active in the development of a trait may act differently under various genotypes (genic milieu). A trait develops as the result of the interaction of several gene pairs; and, if one of these pairs is different, the primary gene may not be able to produce a trait as completely or as incompletely as it could under the other genic complex. Some genes are secondary in their nature of action, in that they modify the action of the gene pair primarily associated with the trait. A true genetic history cannot be gained from a study limited to classical dislocation, since this expression of the gene occurs only if the environment, genic and otherwise, is proper for that complete expression. Only by roentgenographic consanguinity studies can a true genetic picture with all the variations of the penetrance and expressivity of the gene-conditioned chromosome be gained.

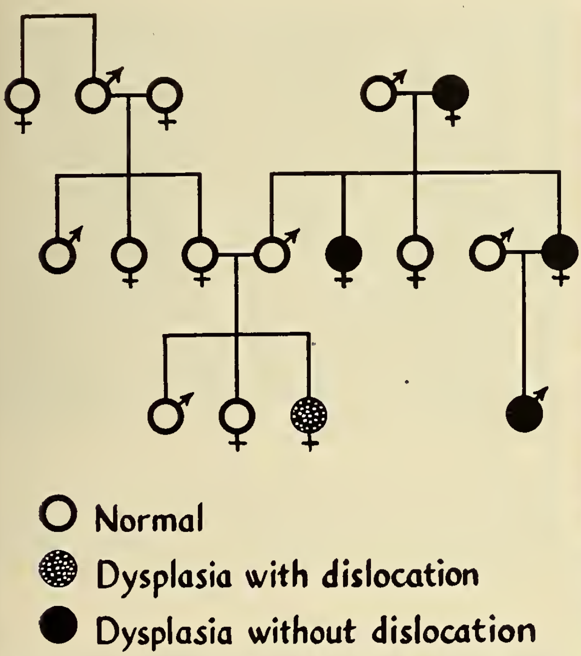

Fig. 3. One of Faber's roentgenographic consanguinity studies shows that in the family of the mother of the patient no carriers were found, while in the family of the father four carriers of the primary hip dysplasia without dislocation were found. (Reproduced from Stammtafel 8. Zeitschrift für Orthopädie, 66:160, 1937.[3])

The sex ratio of the total number of dysplasias approached the universal average, showing that there is, after all, not such a very great difference in the dysplasias of the hip joint between the sexes. The sex ratio of the total number of dysplasias with dislocation, however, revealed a preponderance of dislocations among the female sex. The ratio between the sexes did not vary from previously reported investigations on great numbers of cases, which revealed a ratio of female to male, of six to one. In the female, the dysplastic hip can lead much more easily to complete dislocation than in the male. This constant sex distribution is understood if it is true that a sex-conditioned structure of the pelvis exists—the female having a more perpendicular innominate bone and a shallower acetabulum. The phenomenon of female-sex predominance with actual dislocation requires further investigation.

Sex linkage in the hereditary pattern does not exist, because the genealogical trees show transmission of the genetic character of hip dysplasia from father to son. The dysplasia gene is transmitted usually only from one of the parents, and a recessivity of the genes predisposing to primary dysplasia of the hip is not probable. Hip dysplasia is due to a dominant gene.

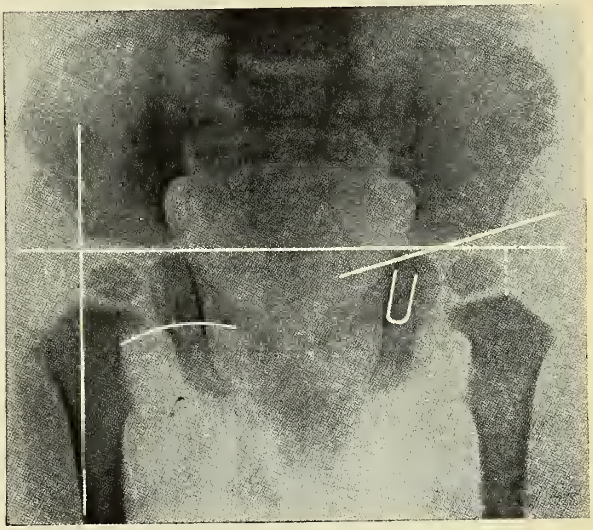

Fig. 4. Roentgenographic study of a normal hip (aged two years). A horizontal line is drawn on the roentgenogram through the clear areas in the depths of the acetabula, which represent the triradiate or Y cartilages. This line is called the Y line. A second vertical line is drawn through the lateral border of the acetabulum and the Y line. Normally the capital epiphysis lies below the horizontal line and within the lower medial quadrant formed by the Y and vertical lines. The angle of incidence of the roof of a normal acetabulum is about 20 degrees. This angle is formed by the junction of the Y line with a line passing from the depth of the socket at the Y line through the lateral border of the acetabular roof.

In case of unilateral hip-joint dysplasia, the vertical line is drawn on the normal side; and on the opposite side a parallel line is drawn at an equal distance from the mid-line.

In hip dysplasia without dislocation, but with varying degrees of subluxation, the capital epiphysis lies below or partially above the horizontal or Y line, but lateral to the vertical line. In hip dysplasia with actual dislocation, it lies above the Y line and lateral to the vertical line.

Note Shenton's line and the tear-drop. Also note the line which measures the distance from the most proximal shadow of the diaphysis to the Y line.

Mendelian ratios cannot be predicted in human families because the genotypes are not known at the time of mating, and the offspring do not occur in numbers great enough to fulfill the mathematical expectancy.

Roentgenographic Features of the Normal Hip

There is no one particular rotentgenographic form of hip joint to be exclusively designated as the normal. There is a range of normals, since there are numerous variations which certainly do not fall outside the classification of the normal. A range of normalcy so generous and wide will be recognized in order to eliminate error which would necessarily result from a narrow and rigid definition of the normal.

The following description of the anatomical and roentgenographic appearance of the normal hip is quoted from Wiberg:

"The acetabulum of the hip joint is a hollow which embraces 170 to 175 degrees of a sphere, and whose opening looks forwards, outwards and downwards. Lining the circumference of the hollow and enclosing the acetabular fossa is the lunate surface, a horseshoe-shaped surface with an anterior and posterior horn which articulates with the head of the femur. Articular cartilage is only found on the lunate surface. The acetabular fossa is filled by the ligamentum teres and fat tissue, and continues in front and below into the obturator foramen by means of the acetabular notch (incisura acetabuli). Attached to the bony margin of the acetabulum and increasing the depth of its cavity is the cotyloid ligament, otherwise known as the labrum glenoidale or limbus of the hip joint. Its inner surface, which is concave, constitutes a direct continuation of the articular cartilage in the acetabulum; its outer surface is convex. The capsule is attached superiorly to the bony margin of the acetabulum outside the attachment of the cotyloid ligament, and consequently there is a space between the two. At the acetabular notch, the cotyloid ligament continues into the transverse ligament.

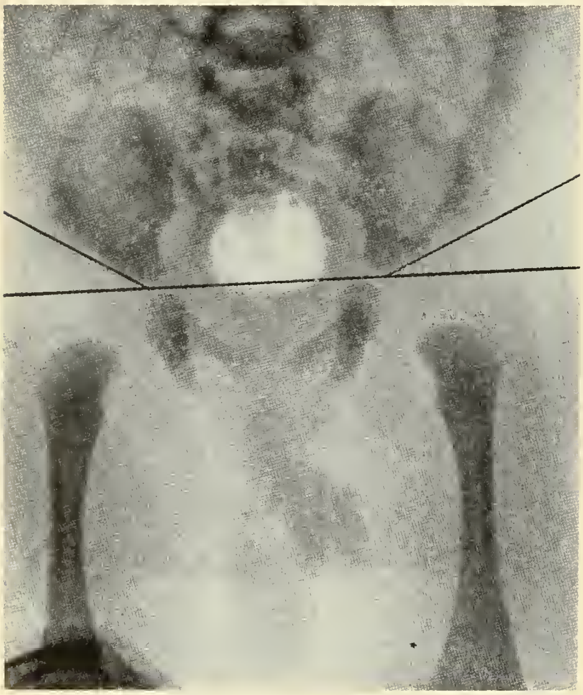

Fig. 5. Roentgenogram of a normal newborn (aged one day). Note the acetabular index.

"The femoral head forms about two-thirds of a sphere and is practically spherical in shape. Two-thirds to three-quarters of the head are received into the acetabulum and cotyloid ligament.

"The roentgen picture of an adult hip has a number of characteristic features (Fig. 6). As a rule, the acetabulum appears as a practically circular segment. The upper part, the roof, runs practically horizontally, with the vertex of the concavity lying almost directly above the center of the head. The inferior part of the acetabulum, the floor, lies practically vertically, and corresponds anatomically with the acetabular fossa. The transition between these two parts of the joint cavity is marked by a step. At the same time the bottom of the acetabular fossa, the acetabular floor, gives rise to the outer side of the formation which is called the U figure, or the tear figure, whose inner side is formed by the bony border of the small pelvis. That this is the way the U figure is formed has been proved by Werndorff, who made it disappear in the roentgen picture by sawing out the bottom plate of the acetabular floor.

"The bone in the acetabular roof nearest the articular cartilage is comprised of a thin layer of cortex which appears as a dense zone in the roentgen picture . . . (Fig. 6).

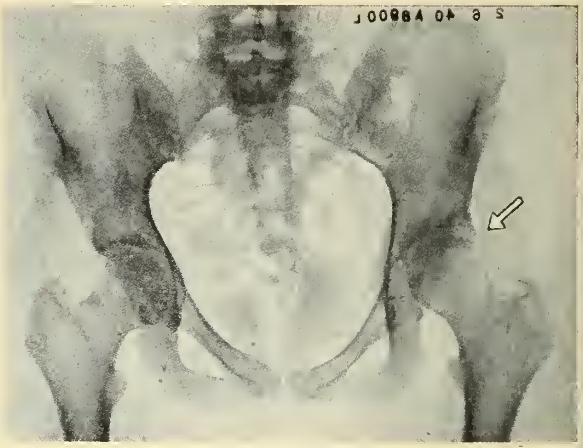

Fig. 6. Note the characteristic features of primary dysplastic acetabulum (Calot's half-citron socket). There is physiological adaptive sclerosis of the acetabular roof. The patient's complaints were hip fatigue and a mild limp when tired. Symptoms were completely relieved by rest and change of occupation. The opposite hip is normal. The patient is a female in the period of early adult life. Her sister is disabled with a classical hip dislocation.

"If the line of the inner curve of the neck is extended, it will continue along the upper border of the obturator foramen—Shenton's line (Fig. 4).

"Children show a number of characteristic details in the roentgen picture, due to the incomplete ossification of their joints (Fig. 4). The cartilage connecting the three pelvic bones in the acetabulum appears as a gap, and because this cartilage has the shape of a Y anatomically, it is called the Y (or triradiate) cartilage . . . therefore . . . the line which is drawn through both the gaps (is known as) the Y line. If the cartilaginous area is broad, it may be difficult to know where to draw the Y line. . . . The bony part belonging to the ischium (is selected) as a definite point, and the line (is drawn) so that it touches it. As long as the epiphyseal nucleus is still separated from the rest of the neck by an epiphyseal line, the most medial part of the diaphysis of the neck looks like a spine, and is called the spine of the neck."

Proper roentgenographic technique is essential to prevent distorted views and erroneous measurements. The patient must be relaxed and placed flat on his or her back. The lower extremities should be in contact, the hips extended, and the patellae facing directly forward. The roentgen tube must be centered in the mid-line of the body and directly over the superior border of the symphysis pubis.

Primary Roentgenographic Features of the Dysplastic Hip

Radiographic diagnosis of hip dysplasia without dislocation is very difficult during the first months of life, and the condition is rarely recognized except where the routine examinations of the newborn are made. Most often it is dislocation of the opposite hip which leads to its discovery. Putti recognized and treated by his abduction method a dysplastic hip without dislocation in a child only thirty-four days old. Unless dislocation is present on the opposite side, it is advisable to wait until the third or fourth month before reaching a definite conclusion; then the ossification center of the femoral head is visible in the roentgenogram and the possibility of error is reduced.

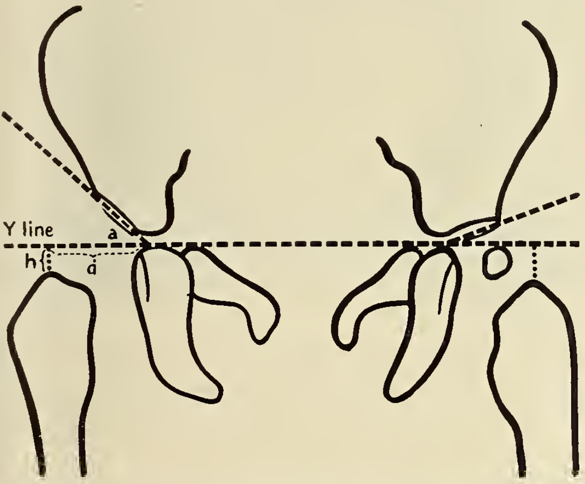

Fig. 7. Hilgenreiner's measurement. Note the Y line, acetabular index (a), high position of the diaphysis as measured from the most proximal shadow of the diaphysis to the Y or triradiate line (h), increased distance from the most proximal shadow of the diaphysis to the acetabular floor (d). (Reproduced with slight changes from Abbildung 1. Zeitschrift für Orthopädie, 66: 151, 1937.[3])

Hip dysplasia or "flat socket" refers not only to the steep acetabulum, but also to all joint-forming parts of the hip joint. However, the primary anatomical and roentgenographic feature of hip dysplasia is the abnormal acclivity of the roof of the acetabulum, which increases the angle of incidence of the roof of the socket. The acetabular index is the angle formed between the roof or iliac portion of the acetabulum and a horizontal line passing through the Y or triradiate cartilages (Fig. 4). Normally the acetabular index in a child is about 20 degrees. The angle is increased to 30 or more degrees in dysplasias (Fig. 7). Kleinberg and Lieberman studied the angle of incidence of the roof of the acetabulum and found the average angle of incidence in the normal newborn to be 27.5 degrees (Fig. 5), and at two years of age 20 degrees (Fig. 4). The angle was 37.5 degrees at the age of two years when the hip presented dysplasia with dislocation. The authors stated that if the angle of incidence is above 30 degrees in an infant, a dislocation probably will develop (Fig. 5). The flatness of the inadequate and incompetent acetabulum can further be proved through the increase in the radius of curvature where the centrum of the sector, which the acetabulum presents on the roentgenogram, goes off laterally, instead of, as in the normal, lying somewhere in the middle of the head of the femur (Calot's half-citron shape) (Fig. 6).

Besides all degrees of subluxation of the femoral head, from the imperceptible to the extreme or potential dislocation, the following features, which are an integral part of the primary dysplasia, should be noted:

1. Hypoplasia of the pelvis.
2. Hypoplasia of the head and central diaphyseal end of the femur (observed before puberty).
3. Delayed appearance and hypoplasia of the epiphyseal ossification center of the head of the femur.
4. Disturbance of Shenton's (obturator-coxofemoral) line.
5. Delayed bony bridging of the ischiopubic synchondrosis.
6. Increased distance of the most superior shadow of the metaphysis or neck of the femur from the acetabular floor or tear-drop shadow (if it is present).
7. High position of the diaphysis as measured from the most proximal shadow of the diaphysis to the Y or triradiate line.
8. The increase in the distance from the shadow of the most medial part of the metaphysis of the neck, which looks like a spine and is called the spine of the neck, to the acetabular floor, or tear-drop, and the decrease in the distance to the Y line.
9. Frequently a classical dislocation of the opposite hip.
10. The position of the limbus cartilage and the relation of the cartilaginous acetabulum and capsule to the femoral head as shown by arthrography.

Putti, one of the greatest authorities on hip dysplasia without dislocation, or preluxation as he called it, depended on the following triad for diagnosis (Fig. 7):

1. An increased distance between the upper femoral diaphysis and the acetabular floor.
2. Hypoplasia or delayed development of the epiphyseal nucleus of the femoral head.
3. An abnormally steep or short acetabular roof.

Secondary Roentgenographic Features of the Dysplastic Hip

Because of the repeated trauma resulting from abnormal sheering forces, mechanical instability, and incongruity of the dysplastic hip, secondary changes are added to the primary anatomical and roentgenographic features. Abnormal development of bone and soft tissues, vascular changes and arthritic sequelae are the result. These changes may be listed as follows:

1. Increased subluxation when compared with previous studies.
2. Delayed development of the epiphyses.
3. Delayed fusion of the epiphyses.
4. Maldevelopment of the femoral head and torsion or anteversion of the femoral neck (Wolff's law).
5. Increased sclerosis of the acetabular roof. The degree of sclerosis is in direct proportion to the degree of maldevelopment of the acetabular roof—physiological adaptive sclerosis (Fig. 6).
6. Coxa valga luxans (Klapp).

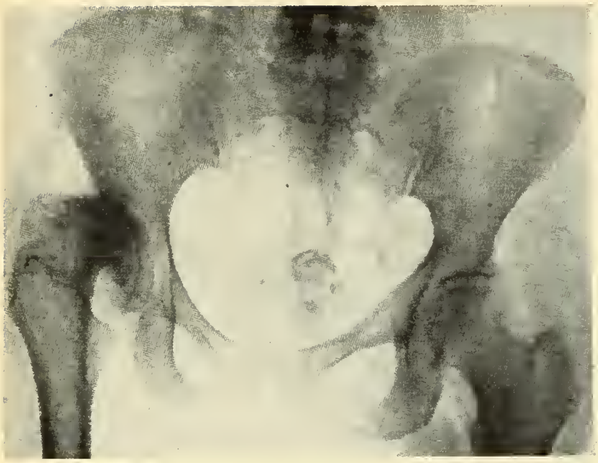

Fig. 8. Note the characteristic features of hip dysplasia with added secondary changes of traumatic arthritis, manifested by loss of joint space, sclerosis, cystic areas of rarefaction, double acetabular floor, osteophytic deposits, and capital drop. The patient is now sixty years of age and walks with the aid of a crutch. Her mother was disabled with classical hip dislocation.

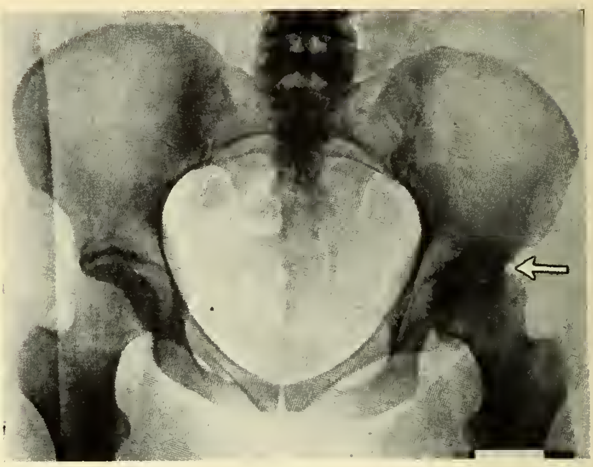

Fig. 9. Note the characteristic features of primary hip dysplasia with acclivity of the acetabular roof and subluxation. Secondary changes of traumatic arthrities with loss of joint space, sclerosis, cystic rarefaction, and double acetabular floor have been added to the primary features. The patient's onset of symptoms had occurred six years previously, with hip fatigue and limp. One year previously severe pain, loss of motion, and deformity developed. She was totally disabled for work, and was not relieved by conservative measures. The opposite hip presents a very mild expression of dysplastic acetabulum. She has a sister disabled with bilateral hip dysplasia, with dislocations reduced in 1903 by Dr. Adolf Lorenz (Fig. 10). Arthrodesis of the hip was advised and performed.

7. Osteochondrosis, coxa plana, Legg-Perthes disease, or osteochondritis deformans coxae juvenilis.

8. Traumatic hypertrophic arthritis of the hip joint or malum coxae senilis with: (a) narrowing of the joint space; (b) osteophytic deposits, capital drop, and double acetabular floor; (c) sclerosis of bone and areas of cystic rarefaction involving the weight-bearing areas of the acetabulum and femoral head (Figs. 8-11).

9. Capsular adhesions, constriction and hypertrophy.

The author is aware of the fact that coxa plana or Legg-Perthes disease does not necessarily have a dysplastic acetabular background. He has observed several cases of coxa plana develop in clinically and roentgenographically normal hips. The acetabular changes were adaptive and developed secondarily to the deformed head. However, the author believes that primary dysplasia of the acetabulum may be the precursor of a group of cases with clinical findings and roentgenographic features that are indistinguishable from cases of coxa plana of unknown etiology. This problem should stimulate investigation.

Preiser in 1907 presented his theory that development of osteoarthritis in the hip was due to poor adaptation between the head and the joint cavity. Wiberg in 1939 conclusively demonstrated the correctness of Preiser's theory. He presented roentgenographic studies of nineteen cases with primary hip dysplasia before and after the development of secondary changes of osteoarthritis.

The author believes that osteoarthritis of the hip, or malum coxae senilis, is frequently traumatic arthritis and develops because of anatomical incongruity and instability of a primary dysplastic acetabulum (Figs. 8-11). He has studied twenty patients who had disability from dysplastic acetabula. Each patient had one member of the family disabled with classical congenital dislocation of the hip. The author's first case (Fig. 9) was recognized in 1935. The patient's sister had congenital dislocation of both hips (Fig. 10), which were reduced by Dr. Adolf Lorenz in Chicago in 1903. This patient with hip dysplasia without dislocation, but with secondary traumatic arthritis, was being treated for tuberculosis of the affected hip.

Roentgenographic Differential Diagnosis

The following list of hip-joint lesions may at times require careful study for differentiation from primary hip dysplasias:

1. Coxa plana or Legg-Perthes disease,
2. Epiphyseal separation,
3. Tuberculosis,
4. Infectious arthritis,
5. Hypertrophic arthritis,
6. Aseptic necrosis,
7. Late septic hip,
8. Neoplasm,
9. Neurotrophic lesions,
10. Old fracture-dislocations,
11. Endocrine dysfunction.

Summary

1. One human trait which has been difficult to explain genetically is congenital dislocation of the hip.

2. An individual does not inherit congenital dislocation of the hip, but does inherit a primary defect, or hip dysplasia, which produces anatomical and physiological alterations of the joint called "flat socket." Only secondarily does actual dislocation occur, and dislocation need not necessarily occur.

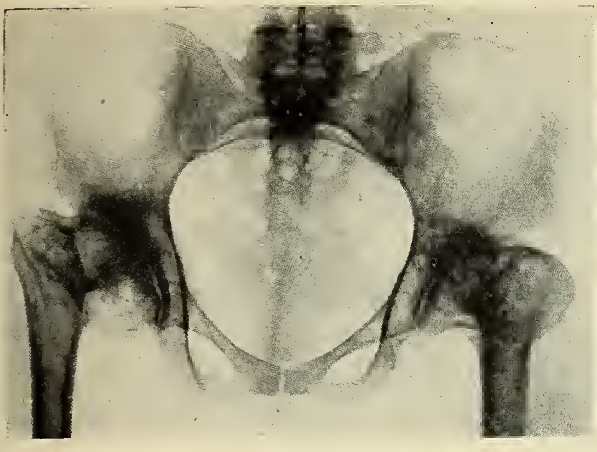

Fig. 10. The patient had bilateral hip dysplasia with dislocations which were reduced by Dr. Adolf Lorenz in 1903 when the patient was three years of age. Note the signs of bilateral hip dysplasia with added changes of traumatic arthritis. The patient is now seriously disabled at the age of forty-two years. Her sister has hip dysplasia without dislocation, but with secondary changes of traumatic arthritis (Fig. 9).

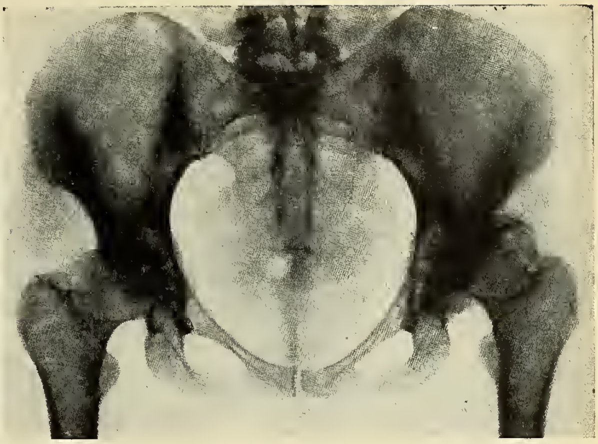

Fig. 11. Roentgenogram of patient thirty-five years old. Note the primary and secondary roentgenographic features of bilateral hip-joint dysplasia without dislocation. The patient's brother has classical dislocation of both hips.

3. Primary hip dysplasia is due to a genetic background.

4. Roentgenographic consanguinity studies are essential for a true genetic investigation of hip dislocation.

5. Dysplasia of the hip without dislocation but with varying degrees of subluxation is a distinct clinical and roentgenographic entity, and should be included in textbooks in the chapter on classical dislocation, because the two entities have the same genetic etiology.

6. Dysplasia of the hip with subluxation occurs more frequently and may be more disabling than classical dislocation.

7. Acclivity of the roof of the acetabulum is the primary anatomical feature of a dysplastic acetabulum or flat socket.

8. Hip dysplasia refers not only to the acetablum, but also to all joint-forming parts of the hip joint.

9. Primary hip dysplasia with dislocation on one side is frequently associated with dysplasia with subluxation on the opposite side.

10. Hip-joint instability and incongruity between the head and socket are the physiological and anatomical expressions of hip dysplasia.

11. Primary hip dysplasia with subluxation may remain asymptomatic for many years; in some individuals it may never be expressed clinically.

12. The extreme disability observed in some individuals is caused by traumatic arthritis of the hip joint resulting from mechanical factors of instability and incongruity.

13. The patient may gain relief of pain and disability by conservative treatment and surgical measures.

14. The geneticist and the surgeon have a tremendous opportunity for co-operative investigation.

15. Earlier recognition and earlier treatment of the dysplastic hip is our only hope for reducing the disability of this large group of patients.

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Discussion

Dr. Leo G. Rigler, University of Minnesota: I was glad to hear Dr. Hart say that the diagnosis of congenital dislocations could be made before the evidence of development of the epiphysis. It is unfortunate that these cases are missed. In my experience, the grandmother sometimes knows more than the doctor about congenital dislocations of the hip. A while ago a doctor called me and told me that the grandmother of a little patient he was treating was making a lot of trouble for him; the grandmother insisted that the child had dislocation. He sent the child in for x-ray examination and I had the unhappy task of admitting to them that the grandmother was right and the doctor was wrong. This was bilateral. Some years ago Dr. Hart brought to our attention this matter of dysplasia of the acetabulum. There are one or two things that always intrigue me about that. If the flat acetabulum is the major factor in congenital dislocations, why don't we meet more dislocations in older children? The other thing that is of interest was the beautiful development of the socket when the dislocation is well reduced in early infancy.

The pressure of any object against bone will tend to produce a socket for it to fit into. The absence of the pressure of the head of the femur may well be a factor in the flatness of the acetabulum. On the whole, however, the evidence favors the theory that Dr. Hart advances.

Dr. Logan Leven, Saint Paul: I wish to ask Dr. Hart one question. He mentioned that dysplasia of the acetabulum was the primary factor in congenital dislocation of the hip and that the deformity of the head and neck of the femur resulted according to Wolff's law. In one case that he showed, there was some dysplasia of the head and neck of the femur at age three months. Since this would be before weight bearing, I do not think that Wolff's law would be a significant factor. Does not the dysplasia affect the head of the femur as well as the acetabulum?

Dr. Hart (in closing): The flat socket which I defined is referred to as a dysplastic hip—a term generally used today. The dysplasia is not limited to the socket but also involves all mesodermal tissues entering into the formation of the hip joint. Bilateral involvement is common. For many years we have focused our attention on the dislocated side and failed to recognize dysplasia of the opposite "healthy" hip. If we study both hips we will find some degree of dysplasia on both sides in the majority of patients. We are continuing to study this problem clinically and radiologically but it is very difficult to approach it genetically. It is practically impossible to obtain roentgenograms of an entire family tree. One must have roentgenological consanguinity studies for a thorough genetic study. If we could study the entire family tree roentgenologically, I am sure that we could repeat the evidence which Dr. Alexander Faber reported in 1935. The bane growth changes of the epiphysis are both primary and secondary, the primary cause being genetic and the secondary cause the result of Wolff's law.

Dr. Rigler: Many have flat acetabuli but do not have dislocations.

Dr. Hart: It is true that the subluxated hip never dislocates. I believe that it is the degree of dysplasia of the capsule as well as the degree of dysplasia of the socket which determines dislocation or subluxation.

The meeting adjourned.

A. E. Cardle, M.D., *Secretary.*

INFECTION OF THE NECK AFTER TONSILLECTOMY

(Continued from Page 853)

for signs and symptoms of the onset of infection in the neck. Should such infection occur, prompt and rational treatment should be instituted. Two cases in which infection in the neck occurred after tonsillectomy are reported.

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DOCTOR OF WHAT?

The *J.A.M.A.*[1], in discussing editorially the term "doctor" in America, says:

Dr. Edward M. Repp, of Philadelphia, has a question for the medical Emily Post. His daily work requires occasional conferences with his druggist and also with the head of a laboratory who examines specimens. Should he address these associates as doctor or mister? In the neighborhood where he resides are also an osteopath, a chiropactor, and a chiropodist. These, too, he meets occasionally while en route on his medical tasks; he never knows whether to say "doctor" or something different. A similar question disturbed Hugh J. McDonald,[2] who discussed the subject not long ago in the *Journal of Higher Education.* A survey of the graduate degrees awarded by the colleges and schools of New York State during 1937 reveals thirteen types of doctors' degrees awarded during the year. . . .

The degree of doctor is now conferred in so many areas of learning that the result is confusion. McDonald feels that the conferring of the doctoral degree is in need of a thorough house cleaning.

The degree of doctor of philosophy (Ph.D.) is granted for three years of full-time study and examination and the preparation of a thesis following the bachelor's degree. The degree of doctor of science (D.Sc.) is granted for an identical program when the major part of the work is in science.

Many times in education, history, literature, economics, sociology, and natural sciences the Ph.D. seems to be granted for meeting a standard of mediocrity. . . .

As McDonald points out, in the field of ill health the assortment of doctorates now includes the degree of naprapathy, which can be had in ninety days without any entrance requirements; doctor of chiropractic in from one to four years depending on the school, with the minimum entrance requirement usually just an elementary school education; doctor of surgical chiropody in from eighteen months to three years, with an entrance requirement like that of chiropractic; doctor of optometry three to four years after high-school graduation; doctor of osteopathy a minimum of four years, with one year of college work as prerequisite; doctor of public health, with as yet little standardization and, incidentally, available to graduates in bacteriology or related fields after three years' study. McDonald believes that some of these people have about as much legitimate claim to a doctor's degree as would a hotel dishwasher to a D.D.W. Then there are also doctors of medicine, doctors of dental medicine, doctors of veterinary medicine, and doctors of dental surgery with better standardized requirements.

Educational authorities might well consider the desirability of some standardization in this area so that the degree of doctor, regardless of the field of learning in which it is applied, will have real significance.

Furthermore, the public should be able to determine from a title the actual qualifications of the man who adorns himself with it. Finally, the economists who devote themselves to propaganda for revolutionizing medical care persistently trade on their doctor of philosophy degrees and thus perpetrate a fraud on the public, who take it for granted that these "doctors" are physicians.—Editorial, *New York State Journal of Medicine,* Dec. 15, 1946.

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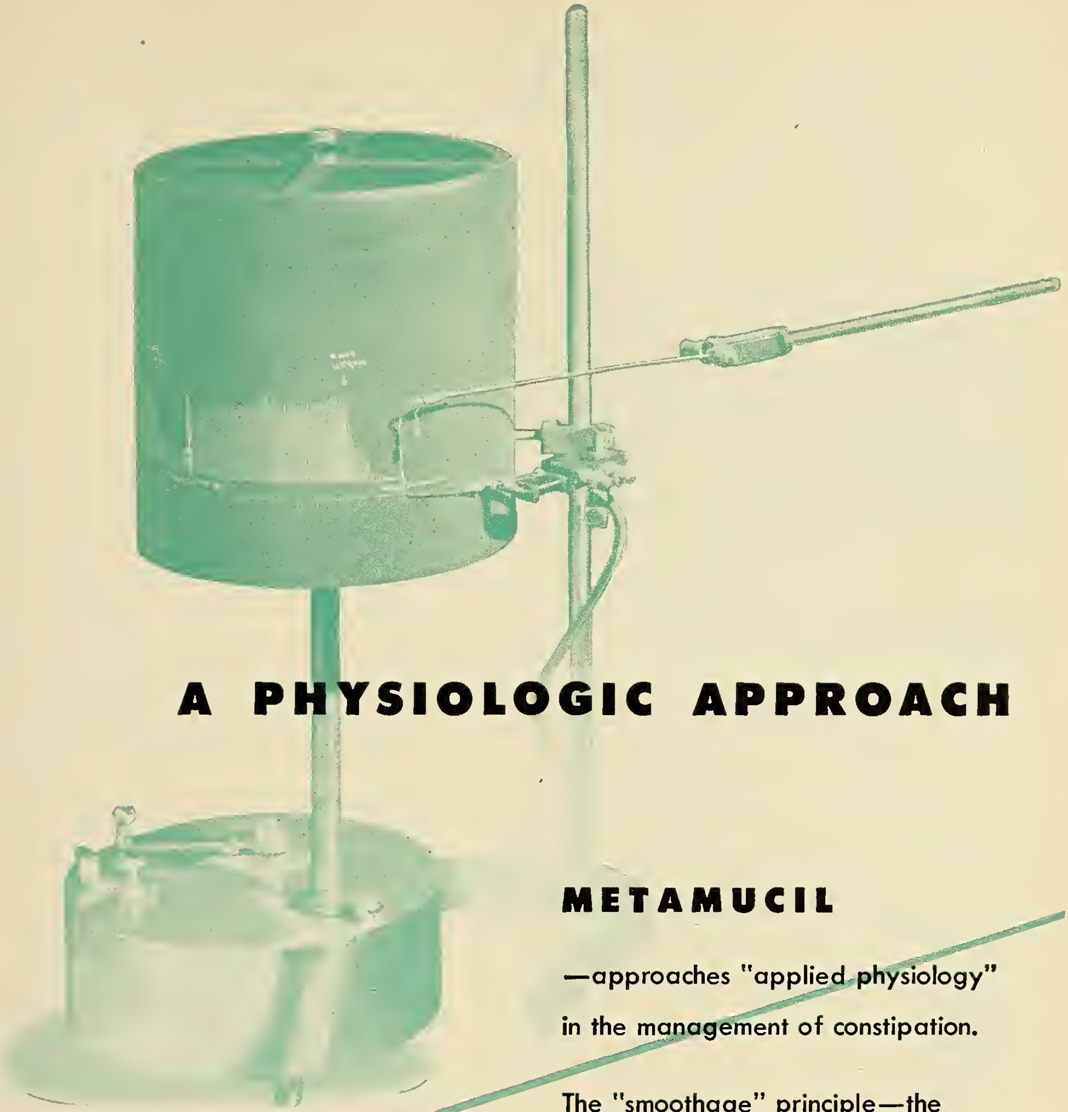
[1] J.A.M.A., 129:1168, (Dec. 22), 1945.

[2] McDonald, Hugh J.: J. Higher Education, 14:189 (April) 1943.



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RESEARCH IN THE SERVICE OF MEDICINE

Reports and Announcements

MEDICAL BROADCAST FOR AUGUST

The following radio schedule of talks on medical and dental subjects by William O'Brien, M.D., Director of Postgraduate Medical Education, University of Minnesota, is sponsored by the Minnesota State Medical Association, the Minnesota State Dental Association, the Minnesota Hospital Service Association in co-operation with the Minnesota Hospital Association and the Minnesota Nurses Association, and the University of Minnesota School of the Air.

Aug. 5	9:00 A.M.	WCCO	Orthopedic Nursing
Aug. 7	9:00 A.M.	WCCO	Coronary Heart Disease
Aug. 12	9:00 A.M.	WCCO	Hospital Annual Report
Aug. 14	9:00 A.M.	WCCO	What is High Blood Pressure
Aug. 19	9:00 A.M.	WCCO	Cost of Chronic Patient Care
Aug. 21	9:00 A.M.	WCCO	Diseases of Allergy
Aug. 26	9:00 A.M.	WCCO	Personality of an Ideal Nurse
Aug. 28	9:00 A.M.	WCCO	Oral Disease

AMERICAN ASSOCIATION FOR THE STUDY OF GOITER

The annual meeting of The American Association for the Study of Goiter will be held in the King Edward Hotel, Toronto, Canada, May 6, 7, and 8, 1948.

The program for the three-day meeting will consist of papers dealing with goiter and other diseases of the thyroid gland, dry clinics and demonstrations.

Communications regarding the program may be addressed to the Corresponding Secretary, T. C. Davison, M.D., Atlanta, Georgia.

AMERICAN COLLEGE OF ALLERGISTS—INSTRUCTIONAL COURSE

The American College of Allergists has announced that its annual Fall Graduate Instructional Course in Allergy will be given in Cincinnati, Ohio, November 3-8, inclusive, under the auspices of the Medical College of the University of Cincinnati.

The program this year is the best ever offered by the College. Forty-six formal lectures are listed and also a special allergy clinic of case presentations. An added feature this year will be three informal discussion groups led by various members of the faculty.

The faculty is composed of more than forty outstanding physicians and scientists from prominent medical centers and colleges in the United States and Canada. The Course presents a comprehensive study of the entire field of allergy—covering the fundamentals, special allergies, specific diseases, and all modern methods of treatment. Symposiums on dermatologic and pediatric allergy are also included, as well as a survey of the laboratory approach to the subject including preparation and standardization of extracts and skin testing.

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SURGERY—Two-week Intensive Course in Surgical Technique, starting September 22, October 30, November 17.
Four-week Course in General Surgery, starting September 8, October 6, November 3.
Two-week Course in Surgical Anatomy and Clinical Surgery, starting September 22, October 20, November 17.
One-week Course in Surgery of Colon and Rectum, starting September 15 and November 3.
Two-week Course in Surgical Pathology, every two weeks.

FRACTURES AND TRAUMATIC SURGERY—Two-week Intensive Course, starting October 6.

GYNECOLOGY—Two-week Intensive Course, starting September 22, October 20.
One-week Course in Vaginal Approach to Pelvic Surgery, starting September 15 and October 13.

OBSTETRICS—Two-week Intensive Course, starting September 8, October 6.

MEDICINE—Two-week Intensive Course, starting October 6.
Two-week Course in Gastro-enterology, starting October 20.
Two-week Course in Hematology, starting September 29.
One-month Course in Electrocardiography and Heart Disease, starting September 15.

DERMATOLOGY and SYPHILOLOGY — Two-week Course, starting October 20.

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The course is recommended to all those especially interested in allergy, and to the general practitioner and specialist who anticipates treating his own allergic patients. It is designed to provide a more comprehensive understanding of the many manifestations of allergy so commonly encountered by the doctor, and to emphasize methods of diagnosis and treatment so that the physician is prepared to offer the greatest aid to his patient.

Programs and complete information can be obtained by writing to the College Secretary, Dr. Fred W. Wittich, 423 La Salle Medical Building, Minneapolis 2, Minnesota.

AMERICAN COLLEGE OF CHEST PHYSICIANS—POSTGRADUATE COURSE

The American College of Chest Physicians is sponsoring a second annual postgraduate course in diseases of the chest to be held during the week of September 15-20, 1947, at the Municipal Tuberculosis Sanitarium, Chicago, Illinois.

The emphasis in this course will be placed on the newer developments in all aspects of diagnosis and treatment of diseases of the chest.

The course will be limited to 30 physicians. Tuition fee is $50.00.

Further information may be secured at the office of the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10, Illinois.

AMERICAN COLLEGE OF PHYSICIANS—RESEARCH FELLOWSHIPS

The American College of Physicians announces that a limited number of Fellowships in Medicine will be available from July 1, 1948-June 30, 1949. These Fellowships are designed to provide an opportunity for research training either in the basic medical sciences or in the application of these sciences to clinical investigation. They are for the benefit of physicians who are in the early stages of their preparation for a teaching and investigative career in Internal Medicine. Assurance must be provided that the applicant will be acceptable in the laboratory or clinic of his choice and that he will be provided with the facilities necessary for the proper pursuit of his work. The stipend will be from $2,200 to $3,000.

Application forms will be supplied on request to The American College of Physicians, 4200 Pine Street, Philadelphia 4, Pa., and must be submitted in duplicate not later than November 1, 1947. Announcement of the awards will be made as promptly as is possible.

The next annual session of the American College of Physicians will be held in San Francisco, April 19-23, 1948.

AMERICAN COLLEGE OF SURGEONS—CLINICAL CONGRESS

The thirty-third annual Clinical Congress of the American College of Surgeons, including the twenty-sixth annual Hospital Standardization Conference, will be

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held at The Waldorf-Astoria, New York, from September 8 to 12.

The five-day program will feature operative and nonoperative clinics in thirty-eight hospitals in New York and Brooklyn, and scientific sessions in general surgery and the surgical specialties, official meetings, hospital conferences, medical motion pictures, and educational and technical exhibits, at the headquarters hotel. Dr. Howard A. Patterson of New York is Chairman of the Committee on Arrangements; Dr. Frank Glenn is Secretary. Dr. Malcolm T. MacEachern and Dr. Bowman C. Crowell, Chicago, the Associate Directors, are in general charge.

For particulars address L. G. Jackson, American College of Surgeons, 40 E. Erie Street, Chicago 11, Illinois.

CHICAGO OPHTHALMOLOGICAL SOCIETY—REFRESHER COURSE

The Chicago Ophthalmological Society will give a 40-hour refresher course December 8 to 13, inclusive. The faculty will include members of the Eye Department of The University of Chicago, The University of Illinois, Loyola University, Northwestern University and staff members of all of the principal hospitals of Chicago. Instruction will consist of didactic and practical course, emphasis being placed on the practical courses given to small groups.

Physicians practicing ophthalmology and eye, ear, nose and throat are eligible for the course. The fee will be $100.00. For details write to the registrar, Miss Maude Fairbairn, 8 West Oak Street, Chicago, Ill.

MEDICO-LEGAL CONFERENCE AND SEMINAR

A medico-legal conference and seminar for pathologists, medical examiners and coroners will be held October 13-18, 1947, at Harvard Medical School, Boston.

The Department of Legal Medicine of the medical schools of Harvard, Tufts, and Boston University in association with the Massachusetts Medico-Legal Society will present a six-day program of lectures, conferences, and demonstrations having to do with the investigation of deaths in the interests of public safety. Attendance will be limited to twenty-five persons who have registered in advance.

Further information may be obtained from the Department of Legal Medicine, 25 Shattuck Street, Boston, Massachusetts.

FIFTIETH ANNIVERSARY CELEBRATION

The September meeting of the Ramsey County Medical Society will be held at 8 P.M. September 23 in the society auditorium, and will be devoted to a celebration of the Fiftieth Anniversary of the founding of the library. Dr. John F. Fulton, Sterling Professor of Physiology at Yale University, will be the speaker of the evening. His being a former St. Paulite, well-known author and authority on medical libraries, makes his choice a particularly happy one. All physicians are cordially invited to attend this meeting.

In 1895, a loan medical library for mutual betterment was established by Dr. J. L. Rothrock, Dr. Arthur Dunning and Dr. Edward Boeckman with headquarters in a room in the old Lowry Arcade in St. Paul. Medical books and journals were contributed and collected by enthusiasts, among whom were Dr. Boeckman and Dr. H. L. Taylor. In the fall of 1897, the Ramsey County Medical Society took over the activities of the Library Association, and a library committee consisting of Drs. J. L. Rothrock, W. B. Morley, and H. L. Taylor was appointed. In 1898, this committee endorsed the publication of a medical journal to provide funds and exchanges for the support of the library. *The St. Paul Medical Journal* began publication in 1899 with Dr. Burnside Foster as editor. From such a modest beginning the Ramsey County Medical Society Library has become one of the largest and best in the state.

MISSISSIPPI VALLEY MEDICAL SOCIETY

The twelfth annual meeting of the Mississippi Valley Medical Society at Burlington, Iowa, October 1-2-3, 1947, will have over thirty clinician-teacher speakers. October 1 will feature an all-St. Louis program conducted by clinical teachers from St. Louis and Washington Universities. On October 2 there will be speakers from various medical centers including Dr. E. L. Bortz, President, American Medical Association, Dr. I. H. Neece, President, Illinois State Medical Society, Dr. M. B. Simpson, President, Missouri State Medical Association, and Dr. H. A. Spilman, President, Iowa State Medical Society. There will be a social hour and banquet on this date. The afternoon program will be devoted to presentations by a group from the University of Iowa. October 3 will feature an all-Chicago program with a number of well-known clinical teachers from Chicago medical schools. A Clinico-Pathologic Conference and a Round Table luncheon will be featured on this date.

The fourth annual meeting of the Mississippi Valley Medical Editors' Association will be held during the annual convention of the Mississippi Valley Medical Society on October 1.

A complete, detailed program will be available September 20 and may be obtained from Dr. Harold Swanberg, Secretary, W.C.U. Building, Quincy, Illinois.

CIVIL SERVICE EXAMINATIONS FOR PHYSICIANS

The State Civil Service Department is announcing unassembled examinations for physicians for appointment in state hospitals and institutions in general medicine as well as in such specialties as psychiatry and tuberculosis.

Salary levels are as follows:

Physician I	$270-$320	in five $10 steps
Physician II	$397-$457	in five $12 steps
Physician III	$474-$544	in five $14 steps

Announcements and application blanks may be obtained by writing the State Department of Civil Service, 122 State Office Building, St. Paul. Applications will be received until further notice, but for inclusion on the first list should be submitted by September 22, 1947.

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SOUTHERN MINNESOTA MEDICAL ASSOCIATION

The annual meeting of the Southern Minnesota Medical Association will be held in Turner Hall, New Ulm, Minnesota, Monday, September 8, 1947.

The morning session will include the following papers, ending with a Clinical Pathological Conference:

Management of Minimal Pulmonary Tuberculosis—David T. Carr, M.D., Rochester
Management of Bronchial Asthma in Childhood—George B. Logan, M.D., Rochester
Experiences with Urethane in the Treatment of Myelogenous Leukemia—Charles H. Watkins, M.D., Rochester
Results of Treatment of Subacute Bacterial Endocarditis—Charles H. Scheifley, M.D., Rochester
Diverticulitis—W. G. Sauer, M.D., Rochester

A complimentary luncheon and the annual business meeting will occupy the noon hour.

The afternoon session, beginning at two o'clock, will include a number of case reports and the following papers:

Proctology and the General Practitioner—W. C. Bernstein, M.D., Saint Paul
New Proctologic Dressings—James K. Anderson, M.D., Minneapolis
Complications Following Hip Fractures—Forrest L. Flashman, M.D., and R. K. Ghormley, M.D., Rochester
Incidence of Pulmonary Embolism in Venous Sclerosing Therapy—M. A. Johnson, M.D., and F. L. Smith, M.D., Rochester
Physical Rehabilitation of the Paraplegic: Treatment of Spastics (Movie)—Earl Elkins, M.D., Rochester

The banquet will be in Turner Hall at 6:30 o'clock, following which L. A. Buie, M.D., Rochester, President, State Medical Association, will speak. The Presidential Address will be delivered by C. M. Robilliard, M.D., Faribault.

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DELEGATES DISCUSS HEALTH QUESTIONS

(Continued from Page 883)

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In Memoriam

JOSEPH H. ABRAMOVICH

Dr. Joseph H. Abramovich of Saint Paul died June 12, 1947, at the age of sixty-eight.

Born in Russia in 1878, Dr. Abramovich came to America as a boy. He graduated from Hamline Medical School in 1905 and took postgraduate study in Vienna. He had practiced most of the past forty years in Saint Paul and recently was a medical consultant for the Veterans Administration in Minneapolis. He was a member of the Ramsey County Medical Society, the Minnesota State and American Medical Associations. He is survived by his wife, two brothers, and three sisters.

WILLIAM DAVIS

Dr. William Davis, for fifty-six years a general practitioner in St. Paul before his retirement on April 30. 1939, passed away on May 9, 1947, at the age of ninety-three.

Dr. Davis was born in Plymouth, Massachusetts, September 28, 1853, the ninth lineal descendant of his Pilgrim ancestors to be born in that historic New England town. Following his graduation from Phillips Exeter Academy in 1871, on the advice of his physician as a cure for astigmatism, he went as passenger on a sailing vessel carrying a cargo of ice from Boston to India. On the return trip he read all the books of Virgil during his spare hours.

After graduating from Harvard College in 1876 he attended Harvard Medical School receiving his M.D. in 1879 and served a three months' internship at the McLean Lying-In Hospital in Boston. One June 26, 1878, he married Sally White Holyoke and in 1880 spent a year in Vienna where his second child was born.

After practicing in Syracuse, New York, for three years, Dr. Davis moved to Saint Paul in 1883, the same year joining the Ramsey County Medical Society. On the occasion of the Diamond Jubilee dinner celebration of the Society in 1935 he told of the early days; how in 1885 many doctors had no telephone but used those in the nearby drug stores, the public being allowed to use the phones located in the fire department barns for calling a physician. The attendance at the County Medical Society meeting was poor until dinner meetings were instituted in 1890. "Das Essen; das ist die Hauptsache" as he was wont to quote from his Vienna days, proved true of medical meetings in the early days as well as the present.

Dr. Davis was president of the Ramsey County Medical Society in 1892, president of the Minnesota State Medical Association in 1901, a charter member of Minnesota Academy of Medicine which was founded October 12, 1887, and its president in 1903, and a member of the Minnesota State Board of Medical Examiners from 1900 until 1906.

Dr. Davis contributed much to early medical publications having been Associate Editor of the *Northwestern Lancet* from October, 1886, until December, 1899, and on the Editing and Publishing Committee of the *Saint Paul Medical Journal* from 1901 until 1912.

Beginning in 1905, Dr. Davis spent his summers at South Orleans, Massachusetts, building a summer home there in 1907. This practice he continued until 1942 when gasoline rationing interfered with motoring East, which he so much enjoyed.

Dr. and Mrs. Davis celebrated their golden wedding in 1928. They were blessed with four children, fourteen grandchildren and twenty-three great grandchildren. Their summers were spent surrounded by members of their large family and friends. Mrs. Davis died in 1929.

Dr. Davis was a member of Unity Church, Saint Paul, and for many years belonged to the Informal Club. He had little use for clubs in general. Fond of bridge, he played a keen game until he was invalided as a result of a fractured hip in November, 1945.

Dr. Davis was held in high esteem by the profession and his many patients, for his medical sagacity and his lovable personal qualities. His was a richer and longer life than most of us can expect to attain.

George E. Senkler
Carl B. Drake

CHARLES MILTON KISTLER

Dr. Charles Milton Kistler was born August 12, 1869, at Pleasant Corner, Carbon County, Pennsylvania. He was descended from Peter Kistler, President of the Republic of Berne, Switzerland. His parents were David and Mary Kistler.

Dr. Charles Kistler came to Minneapolis in 1887, where he studied pharmacy. After three years, however, he entered the Medical Department of the University of

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Minnesota, where he graduated in 1893. He then took a course at the New York Polyclinic Institute.

His early hospital practice was at the St. Barnabas and Asbury Hospitals. At the beginning of the century, when the New Swedish Hospital was opened, he joined the surgical staff.

On March 29, 1900, he married Grace T. Braem of Alma, Wisconsin.

He went abroad for special work in surgery several times—in 1900, in 1905 and in 1934.

Dr. Kistler practiced in Minneapolis for fifty years, restricting his work to surgery. When he became ill four years ago, he retired and spent much time in travel. During the past year, however, he was confined to his home, where he died on July 8, 1947.

Dr. Kistler was a member of the Hennepin County Medical Society, the Minnesota State Medical Association and the American Medical Association.

He is survived by his wife, Grace, his son, Stuart, a sister, Mrs. Arthur Kistler of Saint Paul and several nieces and nephews, among whom is Dr. Alvin Kistler of Minneapolis.

CHARLES WESLEY MORE

Dr. Charles Wesley More of Eveleth, prominent in medical circles in northern Minnesota for many years before his retirement several years ago, died June 1, 1947, at the age of eighty-six.

Dr. More was born in Elkader, Iowa, January 6, 1861. He graduated from Northwestern Medical School in 1888 and took postgraduate work at the Polyclinic in New York.

He began practice at Two Harbors in 1888 and in 1889 moved to Ely. For the next four years he practiced at Ely and from 1891 to 1893 served as a member of the first Board of Health of that city.

He came to Eveleth in 1893 at the time iron mining on the range was just beginning to be developed. He began practice and established a hospital in a one-story building before the town of Eveleth was platted. In 1900 he built the present hospital which bears his name.

Dr. More was a member and past chairman of the Public Library Board of Eveleth, a member and past chairman of the Eveleth Board of Education, one of the first directors of the Miners National Bank of Eveleth, a director of the First National Bank since 1921. During the first World War he was active in the Liberty Loan and American Red Cross drives.

Dr. More was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations, a founder and third Master of the Eveleth Masonic lodge, a member of the Scottish Rite and Aad Temple, Ancient and Arabic Order of the Mystic Shrine in Duluth. He was also an active member of the First Methodist Church.

On October 26, 1892, Dr. More married Blanche E. Streiter and they celebrated their Golden Wedding Anniversary in 1942. Mrs. More passed away in 1944, and for several years Dr. More resided with his daughter, Margaret.

The following editorial which appeared in the *Eveleth News-Clarion* well expresses the esteem in which Dr. More was held in his community.

He Surely Left His Mark

All Eveleth bowed in silent respect and deep sadness when it learned last Sunday morning that the soul of Dr. Charles W. More had departed this earth for its place in Heaven.

So much of the history of this community from its very infancy was wrapped up in this lovable character, that every home was sorely affected.

He was one of the remaining stalwarts who had seen the town outgrow its muddy streets, mining shacks and frontier handicaps to a clean, modern and progressive city.

He was one whose profession was a religion, who brought many a present-day citizen into this world, who took a personal interest in his patients, no matter what the risk or difficulty to reach them and who maintained the pace until his reserve strength was all but exhausted.

Few people will ever know all that he did for the community and for the cause of suffering humanity. Never once did public confidence and respect ever flag in Dr. More's ability and honesty. He was Eveleth's No. 1 gentleman.

Keenly interested in seeing that youngsters of this community secured the best in education, Dr. More served many years on the library and school boards and our entire school system is a memorial to his efforts —for he was one of its foremost champions.

When his name became connected with a local business institution, it immediately carried public confidence.

His own hospital, about the earliest and most recognized on the Mesaba Range, stood for the best in medical and surgical attention. It is significant that this man passed to his eternal reward in the institution that he founded.

To this great example of manhood, the editor pays his humble tribute.

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ROBERT HUGH MONAHAN

Dr. Robert H. Monahan of International Falls, formerly an orthopedist in Minneapolis, died June 3, 1947, at the age of seventy-six, while en route to his former home in New Brunswick, Canada.

Dr. Monahan obtained his medical degree from the University of Minnesota in 1906 and practiced at International Falls and at Blackduck. He held the rank of Captain in the British Army Medical Corps during World War I, and located in Minneapolis in 1920. In 1935 he returned to International Falls. While in Minneapolis he was a member of the Hennepin County Medical Society and transferred to the Upper Mississippi Medical Society on moving to International Falls.

Dr. Monahan is survived by his wife, Dr. Elizabeth Monahan of Minneapolis, a son Robert, Jr., a daughter, Mary, and five grandchildren.

LLEWELLINGTON D. PECK

Dr. L. D. Peck, prominent physician of Hastings for the past forty-five years, died July 4, 1947 at St. Mary's Hospital, Rochester, from cerebral thrombosis. He had been seriously ill for six weeks and was sixty-nine years old at the time of his death.

Born in Rochester, Minnesota, August 22, 1877, Dr. Peck received his early schooling there, graduating from the Rochester High School. He received his medical degree from Hamline Medical School in 1902. The same year he began practice in Hastings and for the entire period of his practice there served as physician for the river division of the Milwaukee railroad. About fifteen years ago he established St. Francis Hospital. For a number of years he served as alderman and twice was elected mayor. He was also an active and influential member of the Hastings school board.

Dr. Peck was a member of the Dakota County Medical Society, of which he was secretary at the time of his death, the Minnesota State and American Medical Associations. He was a member of the Guardian Angels church and the Knights of Columbus.

During World War I, Dr. Peck was chosen as medical examiner for Dakota County.

In 1904 Dr. Peck married Katherine Fasbender of Hastings. He is survived by his wife and two children, Dr. Llewellyn R. Peck, who was a partner with his father, and a daughter, Mrs. Cyrus C. Erickson of Durham, North Carolina.

For these many years active in the civic life of Hastings, Dr. Peck will be greatly missed by his many patients and friends.

EMIL C. ROBITSHEK

Dr. Emil C. Robitshek, a prominent surgeon of Mankato and Clinical Assistant Professor of Surgery at the University of Minnesota, died June 23, 1947. He was sixty-six years of age, having been born in Bohemia, August 18, 1880. As an infant he came to America and became a naturalized citizen in 1903.

A graduate of South High School, Mankato, Dr. Robitshek obtained his medical degree from the University of Minnesota in 1903, and interned at the Minneapolis General Hospital. He took postgraduate work in Vienna, Berlin, and Prague before beginning practice in Minneapolis.

Dr. Robitshek was a Fellow of the American College of Surgeons, a diplomate of the American Board of Surgery, and a past president of the Minneapolis Surgical Society. He was also a member of the Minnesota Academy of Medicine and a staff member of Eitel and Abbott Hospitals. He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He also belonged to Phi Delta Epsilon medical fraternity, Acacia Lodge and Zuhrah Shrine Temple.

Dr. Robitshek is surved by his wife, a son, H. J Robitshek of Green Bay, Wisconsin, and a daughter, Mrs. Lewis K. Wayne of Minneapolis.

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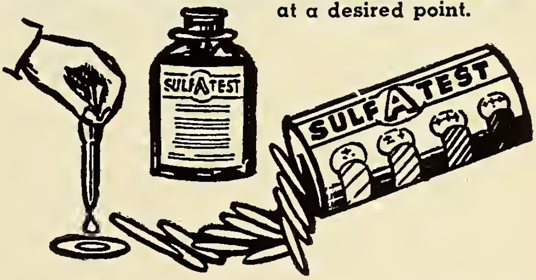

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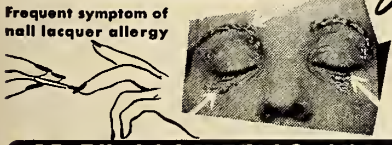

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◆ Of General Interest ◆

Dr. J. W. Hawkinson, Luverne, in July moved from his old office to new quarters in the recently constructed Fitzer Building in Luverne.

* * *

Dr. O. M. Rotnem, formerly of Minneapolis, has moved to, Spring Grove and formed a partnership medical practice with Dr. L. A. Knutson of that city.

* * *

Dr. W. J. Bushard, Minneapolis, has moved his offices to 704 Physicians and Surgeons Building. His practice is limited to ophthalmology and ophthalmic surgery.

* * *

Dr. Herman F. Hilleboe has resigned as Assistant Surgeon General of the U. S. Public Health Service and has been appointed State Commissioner of Health of New York.

* * *

Announcement has been made that Dr. Karl W. Pleissner, Minneapolis, has opened an office in Loretto and is conducting a practice there every Wednesday, day and evening.

* * *

Dr. Paul F. Dawn, Minneapolis, has been elected president of the Minnesota Heart Association, a project initiated by the Heart Committee of the Minnesota State Medical Association.

* * *

Eighty-five years old, Dr. E. E. Shrader, Winsted's only physician, is still maintaining an active medical practice. He celebrated his eighty-fifth birthday on June 30.

* * *

Dr. N. J. Kulzer, Hastings, was elected department surgeon of the Veterans of Foreign Wars at the annual state VFW convention in Duluth during the last week of June.

* * *

Dr. William H. Hollingshead has become associated with Dr. Harvey O. Beek in the practice of internal medicine, with offices at 1352 Lowry Medical Arts Building, Saint Paul.

* * *

Reappointed to the State Board of Medical Examiners, Dr. Albert Fritsche, New Ulm, will serve on the board for a term ending May 1, 1954. Dr. Fritsche has been a member of the board since 1933.

* * *

Major Charles W. Fogarty, a former member of the Mayo Clinic staff, has been separated from the army and plans to enter private practice in Saint Paul, it was announced July 2.

* * *

Eighty-two pediatricians from thirty different countries visited the University of Minnesota Hospitals on July 26 as part of a tour of pediatric centers throughout the nation. The tour followed the Fifth International Congress of Pediatrics, held in New York City during July.

* * *

Dr. Albert G. Schulze, Saint Paul, has resigned from the Ramsey County Welfare Board, it was announced July 2. Dr. Schulze had been a member of the board since May 18, 1942.

* * *

Dr. B. R. Kirklin, Rochester, will direct a series of special courses for more than 1,000 radiologists at the forty-eighth annual meeting of the American Roentgen Ray Society in Atlantic City, September 16 to 19.

* * *

The appointment of Dr. H. R. Tregilgas, South Saint Paul, to the State Board of Examiners in Basic Science was announced on June 19. Dr. Tregilgas, whose term extends to April 1, 1953, succeeds Dr. Charles Bolsta, Ortonville.

* * *

Dr. Arnold E. Naegeli has completed a year of postgraduate study at the University of Minnesota, following his discharge from military service and has resumed the practice of surgery at 1154 Medical Arts Building, Saint Paul.

* * *

At the recent annual meeting of the American Medical Association in Atlantic City, Dr. Cecil J. Watson, head of the Department of Medicine in the University of Minnesota Medical School, was elected chairman of the association's Section on Internal Medicine.

* * *

Announcement has been made that Dr. S. E. Friefeld, Wadena, has passed the examination of the American College of Radiology and become a diplomate of the American Board of Radiology. Dr. Friefeld is a staff member of Wesley Hospital in Wadena.

* * *

The Associated Alumni of the University of Colorado has awarded the Norlin Medal for distinguished achievement to Dr. O. T. Clagett, Mayo Clinic surgeon, it was recently announced. Dr. Clagett graduated from the University of Colorado School of Medicine in 1933.

* * *

Dr. Theodore Armstrong, formerly of Northfield, who has been on the staff of Minneapolis Veterans Hospital since his return from military service, has moved to Seattle, Washington, where he has accepted a two-year residency in surgery in the Virginia Mason Hospital.

* * *

A resident physician at the University of Minnesota Hospital, Dr. Robert H. Conley, formerly of Watertown, South Dakota, will be married on September 6 to Miss Harriette Marie Hathaway of Mankato. A graduate of the University of Minnesota Medical School, Dr. Conley is specializing in internal medicine.

Dr. C. A. Aldrich and Dr. T. J. Dry, Rochester, attended a meeting of the International Congress of Pediatrics, held in New York City in July. While there, Dr. Aldrich attended a meeting of the Committee on Maternal and Child Feeding of the National Research Council.

* * *

Formerly of Wheaton, Dr. George W. Bagby has opened an office for the practice of medicine in Cannon Falls. Dr. Bagby, who recently completed his internship at Ancker Hospital in Saint Paul, is a graduate of the medical school of Temple University in Philadelphia.

* * *

Announcement has been made that Dr. P. S. Hench, Rochester, has been elected chairman of the American committee of the Ligne International Contre le Rheumatism, and will be in charge of arrangements for the International Congress on Rheumatic Diseases to be held in the United States in 1949.

* * *

As guest speaker at the sanatorium commission meeting in Crookston on July 9, Dr. Gilbert Mark of the State Board of Health discussed a proposed x-ray survey to be conducted, using mobile x-ray units, in parts of Polk County for a six-week period in November and December.

* * *

President-elect of the American Orthopaedic Association is Dr. Ralph K. Ghormley, Rochester, who was chosen for the office at the association meeting in Hot Springs, Virginia, on June 30. Dr. Ghormley, head of the Orthopedic Section of the Mayo Clinic, will assume the presidency in June, 1948. He has been a member of the association for twenty years.

* * *

Dr. E. G. Hubin, formerly of Swanville, opened his medical practice in Sandstone on June 30, replacing Dr. Manuel Brownstone who has moved to Clear Lake, Iowa, to start a new practice.

Dr. Hubin, a graduate of the University of Minnesota Medical School in 1929, was affiliated with a Deerwood sanatorium before moving to Swanville to conduct a general practice.

* * *

On June 15 Dr. and Mrs. J. H. Dudley, of Windom, celebrated their golden wedding anniversary. Married in Albert Lea fifty years ago, they have lived in Windom since 1906.

Dr. Dudley, after graduating from Rush Medical College in 1896, practiced medicine in Heron Lake before moving to Windom to carry on his medical practice from 1906 to 1940. In that year he gave up his medical career to become probate judge.

* * *

On July 4 Dr. William O. Finkelnburg, Saint Paul, formerly of Winona, was married to Miss Mary Evelyn Mitchell of Belle Fourche, South Dakota. The ceremony was performed at the home of friends in Saint Paul.

Dr. Finkelnburg, a graduate of the University of Minnesota Medical School, interned at Ancker Hospital in Saint Paul and is now taking postgraduate work in surgery in Saint Paul.

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Plans are being made to conduct a series of rural health clinics in Goodhue County during September and October. Through the clinics every member of rural families will have the opportunity to be Mantoux-tested for tuberculosis, vaccinated for smallpox and immunized against diphtheria.

Among those co-operating in the rural clinic program will be Dr. Karl Pfuetze, superintendent of the Mineral Springs Sanatorium.

* * *

The resignation of Dr. M. W. Smith, Red Wing, from the Mineral Springs Sanatorium commission was announced on July 15. Dr. Smith was first appointed to the commission when the sanatorium was built in 1913, and he served on it until he entered service in 1918. He was reappointed to the position in 1929 and served continuously until his resignation in July.

Appointed to succeed Dr. Smith as a Goodhue County representative on the commission was Dr. Royal V. Sherman of Red Wing.

* * *

Dr. R. G. Bickford, a Mayo Clinic research associate in biophysics, flew to London on July 12 to appear on the program of the International Electroencephalography Congress meeting, held in London on July 14 to 24.

Dr. Bickford presented a paper written in collaboration with Dr. E. J. Baldes, Rochester, entitled "The Electroencephalogram in Posterior Fossa Tumors," and another paper, written with Dr. M. E. Griffin, Rochester, on "Diagnostic and Theoretical Significance of the Inter-Ear Electroencephalogram."

* * *

A homecoming celebration was held on July 13 in honor of Dr. M. L. Ransom, Hancock, who has practiced medicine in that city for forty-four years. Highlight of the celebration was a parade comprised entirely of persons whose births Dr. Ransom attended. The procession was divided into five divisions, according to the birth years of the participants, with the first section consisting of persons brought into the world by Dr. Ransom from 1903 to 1910. Succeeding divisions were for the years 1911 to 1920, 1921 to 1930, 1931 to 1940 and 1941 to 1947.

* * *

Fifty years in the practice of medicine were celebrated by Dr. K. E. Berquist, Battle Lake, on June 10.

A graduate of Hamline University in 1899, Dr. Berquist served his internship at Bethesda Hospital in Saint Paul. He then practiced in several cities in Minnesota before moving to Chicago to specialize in eye, ear, nose and throat diseases. From 1914 to 1935 he carried on his medical practice in Duluth and then joined his son-in-law, Dr. C. A. Boline, in Battle Lake. Since 1943 he has been affiliated with the Otter Tail County Sanatorium.

* * *

Robert G. Rossing, son of Rev. T. H. Rossing of Sacred Heart, Minnesota, a member of the graduating class of the University of Minnesota medical school this year, was presented on July 24 by Dean Diehl with an award consisting of a silver medallion and a check for $100.00, the prize offered by the Southern Minnesota Medical Association to the member of the Senior Class who has shown the greatest proficiency in the clinical fields of medicine and surgery during his Junior and Senior years. Rossing is twenty-two years of age, married, and plans to become a medical missionary to China after completing his internship.

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Knighthood was recently conferred upon a former fellow of the Mayo Foundation, Dr. A. H. McIndoe, London, for conspicuous services to the state.

Coming from New Zealand, Dr. McIndoe became a fellow in surgery in the Mayo Foundation in January, 1925, and in 1930 he received an M.S. degree from the University of Minnesota. He then went to England and entered private practice. Specializing in plastic surgery, he won high recognition for his contributions both before and during the war. In 1936 he delivered a Mayo Foundation lecture in Rochester on the subject of plastic surgery as practiced in England.

* * *

Dr. Herbert A. Hartfiel, formerly of New York City, has announced the opening of his office for the practice of medicine and surgery in Montevideo.

A pre-medical student at the University of Minnesota, Dr. Hartfiel took his medical training at the University of Kentucky in Louisville. Following internship in Norton Memorial Infirmary and St. Joseph's Hospital in Louisville, he engaged in general practice in Northwood, Iowa, for several years. He then went to Europe and studied surgery for two years in Berlin and Vienna. Upon his return he practiced for ten years in New York City before coming back to Minnesota.

* * *

July 27 was "Dr. Higgs Day" in Park Rapids when residents of that city and surrounding communities gathered to celebrate the thirty-fifth anniversary of the arrival of Dr. Walter Higgs in Park Rapids as a practicing physician.

The celebration began with a parade, which had as a principal feature a large group of the persons brought into the world by Dr. Higgs in the past thirty-five years, many of whom were accompanied by their own children. At a program in the school park following the parade, tribute was paid to Dr. Higgs by the principal speaker, Dr. Charles H. Pierce of Wadena. After the program a community picnic was staged in the park.

* * *

Formerly of Duluth, Dr. W. O. McLane has joined the Wadena Clinic, taking over the Eye, Ear, Nose and Throat Department, left vacant last fall by the death of Dr. Harry T. Frost. In his new practice Dr. McLane is associated with Dr. C. H. Pierce and Dr. J. S. Grogan of the Wadena Clinic.

Dr. McLane was graduated from Rush Medical College, Chicago, in 1928. He then practiced in several Minnesota cities until 1942. From 1943 to 1946 he took postgraduate work in eye, ear, nose and throat diseases at the University of Illinois, after which he became associated with Dr. F. N. Knapp and Dr. A. O. Olson in Duluth. He moved to Wadena on July 15.

* * *

Liberation of the University of Minnesota's nonresident admission policy as it pertains to the school of nursing now permits consideration of the admission applications of young women high school graduates from outside the state who desire to study nursing.

Students admitted under this new liberalized policy must meet the required admission qualifications. They must also remain in the nursing program to be permitted to remain in the University.

The University of Minnesota nursing program includes basic professional training in nursing leading to the bachelor of science degree, advanced professional training for professional nurses, a certificate course in clinical nursing for professional nurses and a certificate course in practical nursing.

* * *

Surgical research at the University of Minnesota will be greatly benefited when the proposed Mayo Memorial building is completed, Dr. Owen H. Wangensteen, head of the Department of Surgery at the University, has announced.

"Construction of the building also will augment our opportunity to bring the work of our experimental surgical laboratory into closer liaison with the work being done in the University Hospitals," he stated.

At present the eight operating rooms of the University Hospitals are divided into three suites in three different sections of the hospitals, while the surgical laboratory is located in Millard Hall, a block away from the hospitals. The nineteen-story Mayo Memorial, on which construction is expected to start next spring, will provide the Department of Surgery with a compact unit on one floor, including sixteen operating rooms, surgical laboratories, offices and consulting rooms.

* * *

A father and five sons practicing together in a group is unique and worth recognition. Dr. William F. C. Heise of Winona, head of the Heise Clinic of that city, has four sons, Herbert, William, Carl, and Paul already associated with him, and his fifth son, Phillip, will join the group November 1. Dr. William F. C. Heise has been practicing in Winona since 1898, having graduated from Rush Medical College in 1896. Dr. Herbert graduated from Jefferson Medical College and has specialized in surgery; Dr. William graduated from Northwestern and is a pediatrician; Dr. Phillip, now a resident at St. Barnabas Hospital in Minneapolis, has specialized in obstetrics and gynecology; Dr. Paul, a graduate of Marquette University, has specialized in surgery and pathology, and Dr. Carl, a graduate of Jefferson Medical College has chosen eye, ear, nose and throat for his specialty. The new clinic building which is completely equipped for the best in medical service, was officially opened July 7, 1947.

DR. MELLBY HONORED

In recognition of forty years of service to the community of Thief River Falls, the citizens of that city celebrated Doctor Mellby Day on June 30, 1947. The celebration consisted of a banquet at the Trinity Lutheran Church followed by a community program at the Lincoln Hight School Auditorium, which was concluded by an address by President James L. Morrell of the University of Minnesota.

Dr. O. F. Mellby came to Thief River Falls in 1907 when the estimated population of the town was about 5,000. The son of the Reverend Ole Andreas Mellby of Norway who came to Le Sueur in 1872, Dr. Mellby attended St. Olaf Academy in Northfield, St. Olaf College, and the Minneapolis College of Physicians and Surgeons. After a year's internship at Ancker Hospital and five years of practice at Willmar and Warren, Minnesota, he began practice at his present location in August, 1907. Those were the days of long trips by horse and buggy, and Dr. Mellby had his share of that strenuous life.

Dr. Mellby has been active in civic, social and religious affairs, having served on the local school and park boards. For nine years he served on the Minnesota State Board of Health. He was a trustee of the Trinity Lutheran Church a number of years.

To those who know Dr. Mellby, this recognition of forty years of service is justly deserved.

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BOOK REVIEWS

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RH: ITS RELATION TO CONGENITAL HEMOLYTIC DISEASE AND TO INTRAGROUP TRANSFUSION REACTIONS.

Edith L. Potter, M.D., Ph.D., Assistant Professor of Pathology. Dept. of Obstetrics and Gynecology, The University of Chicago and the Chicago Lying-in Hospital. 344 pages. Prices $5.50. Chicago: Year Book Publishers, 1947.

Since the discovery of the Rh factor in 1941, the literature, both lay and scientific, has been flooded—at times to surfeit—with articles concerning it. Unfortunate it is, that a development of such importance should have appeared during the war years in which the activities of physicians left little time for comprehensive study of the many new developments in medicine. While at the same time the lay press, in attempts to dramatize the new techniques of medicine has, at least in the instance of the Rh factor, created considerable concern among the laity.

Dr. Potter's book, therefore, appears at an opportune moment. The author is admirably qualified to present an authoritative summary of the subject. She is a pathologist in the field of obstetrics and of diseases of the fetus and newborn infant and has had wide experience with infants who suffer from erythroblastosis or anemia of the newborn.

The book is unusually easy to read for a treatise—the logical flow of ideas, the carefully arranged plates and tables, the excellent topography and pleasing format, all contributing. The author is especially to be commended for her clear presentation of a subject with such a complex, contradictory, and labile terminology.

In contrast to usual procedures, the author has presented in the first twenty pages of the book a general summary of the entire subject. This, in itself, is a tremendous aid to the hurried practitioner. Succeeding chapters give a comprehensive study of the literature leading to the discovery of the Rh factor in 1941 and concerning subsequent studies. The history, theoretical background, genetic theories of the Rh factor as well as the theory, pathology clinical diagonsis, course, differential diagnosis, prevention, and treatment of hemolytic disease of the newborn are discussed. The author includes a chapter on techniques of determination of Rh status and of antibody determination.

The volume is highly recommended, both as an introduction to the subject and as a constant reference for all practitioners who will find in it the basis for valid judgments, preventative care, and therapy in practice.

John G. Mayne, M.D.

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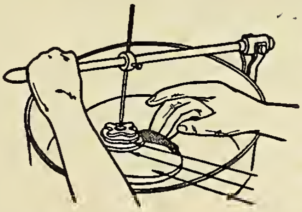

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 **September, 1947** **No. 9**

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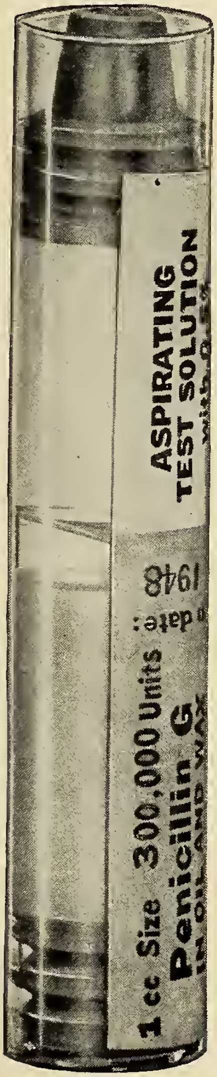

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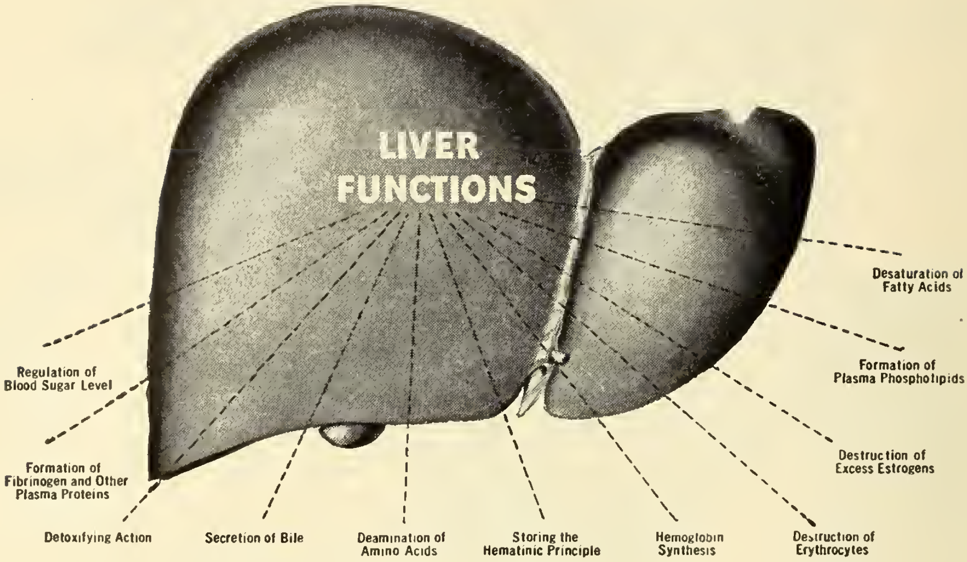
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*BOGERT, L. J.: *Nutrition and Physical Fitness, 4th edition, 1943, Chapter IX, p. 22.*

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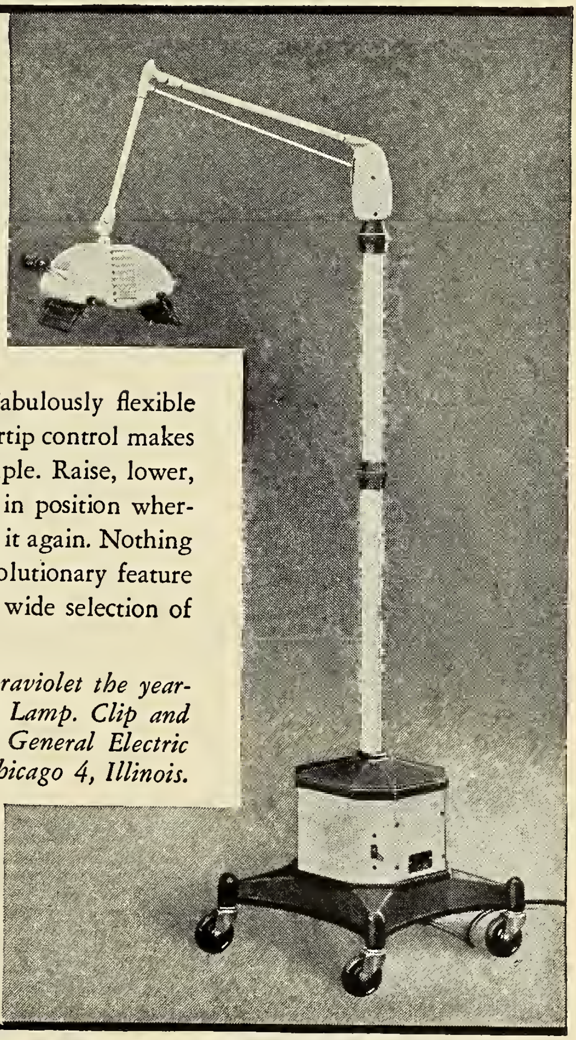

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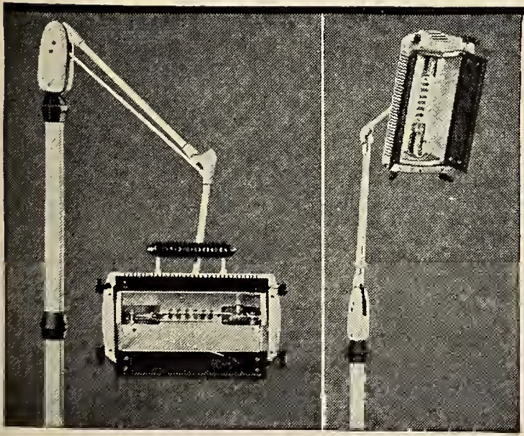

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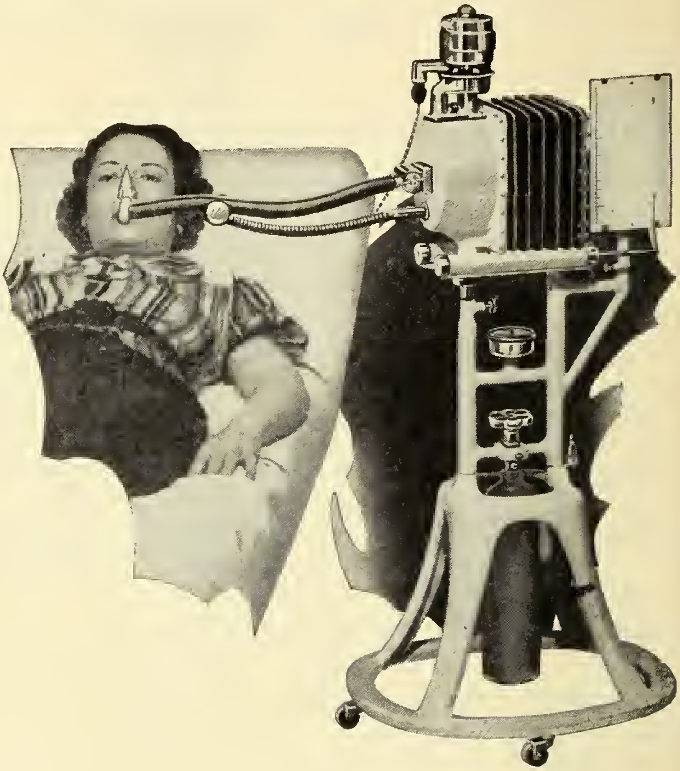

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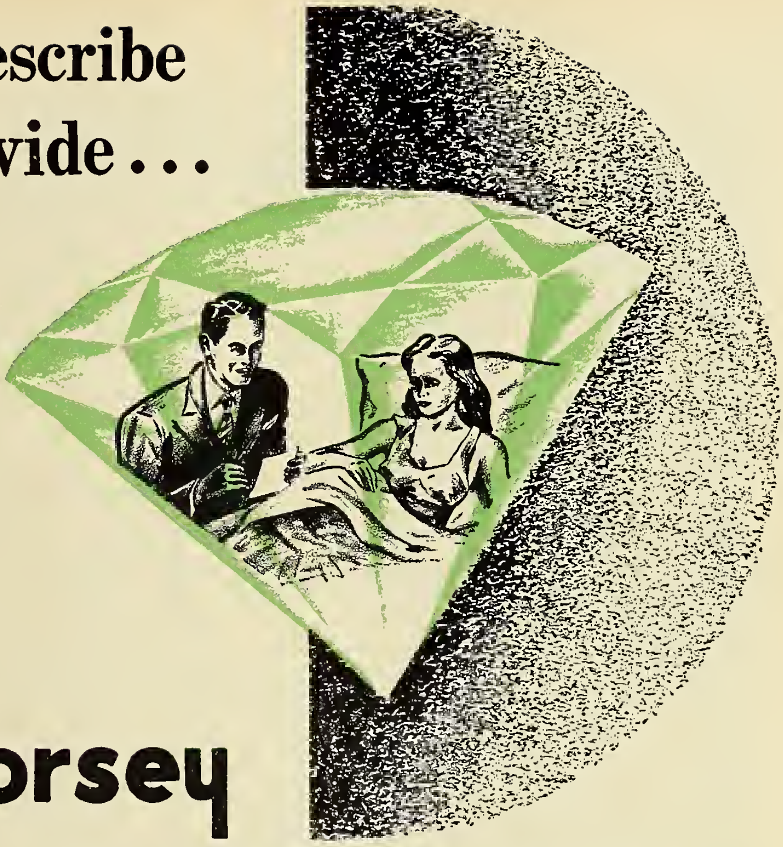

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* Vital Statistics—Special Reports: Vol. 25, No. 12, National Office of Vital Statistics, Washington, D. C. (Oct. 15) 1946, p. 206.

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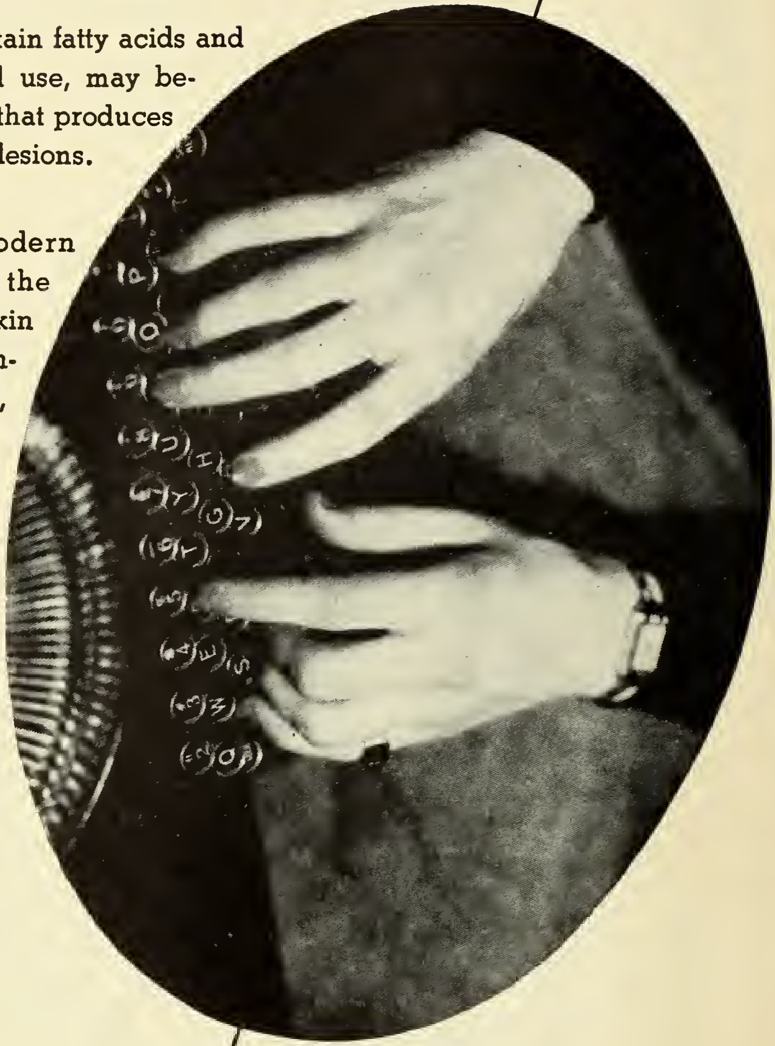

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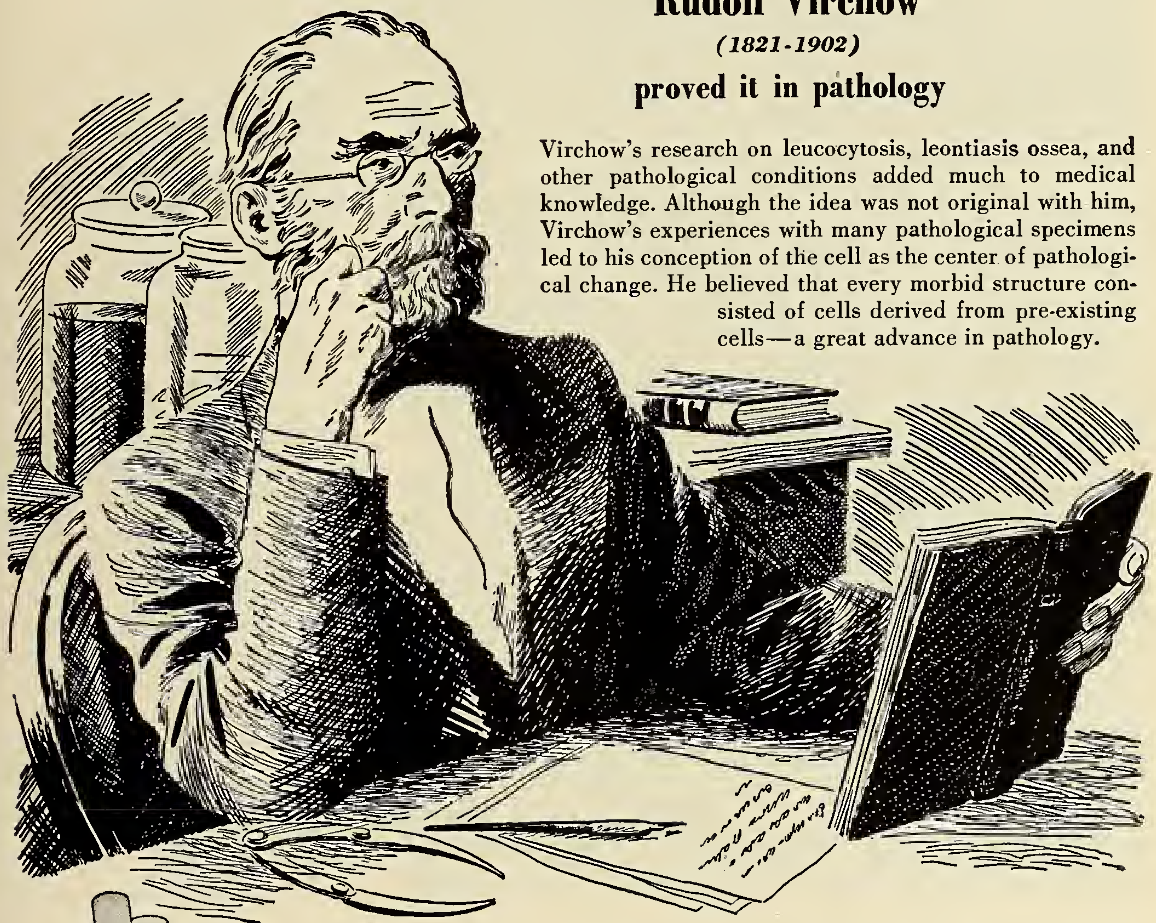

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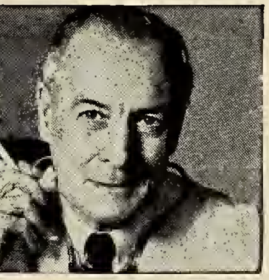

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[1] Irvin, Abell, M.D., Chairman, Bd. of Regents, Am. Col. of Surgeons; Am. Jl. of Nursing, March, 1947.

[2] A. E. Hedback, M.D., Editor, Modern Medicine; Jl.-Lancet, April, 1947.

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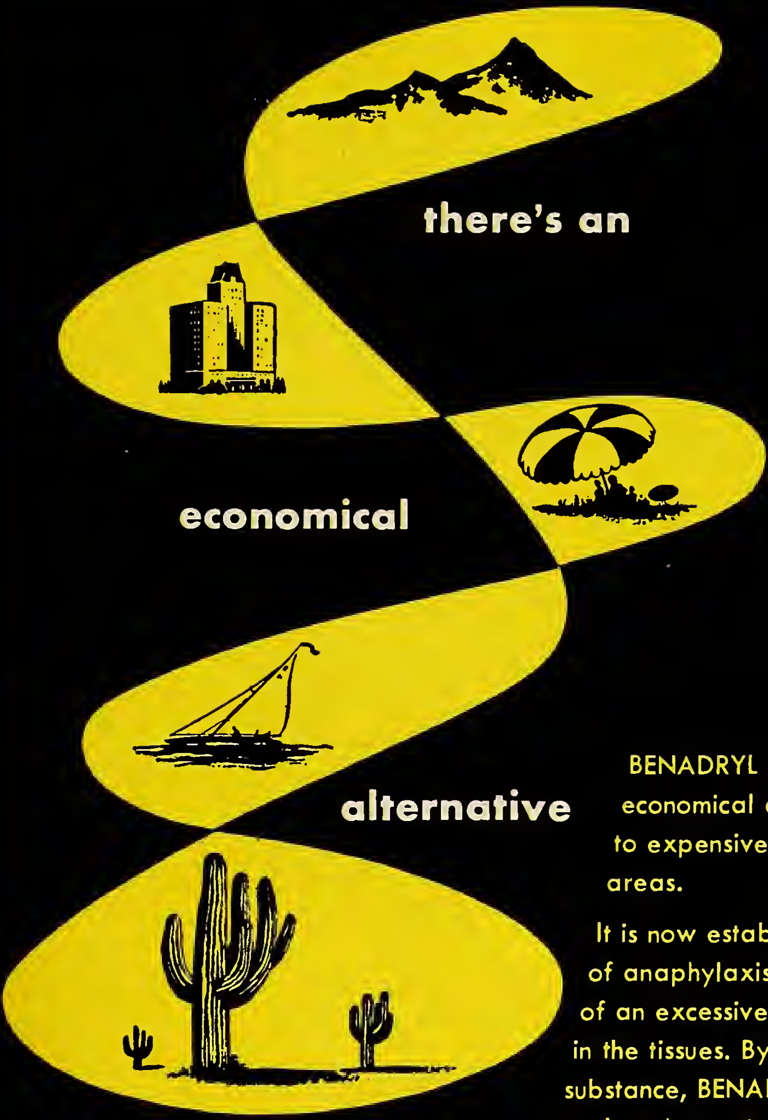

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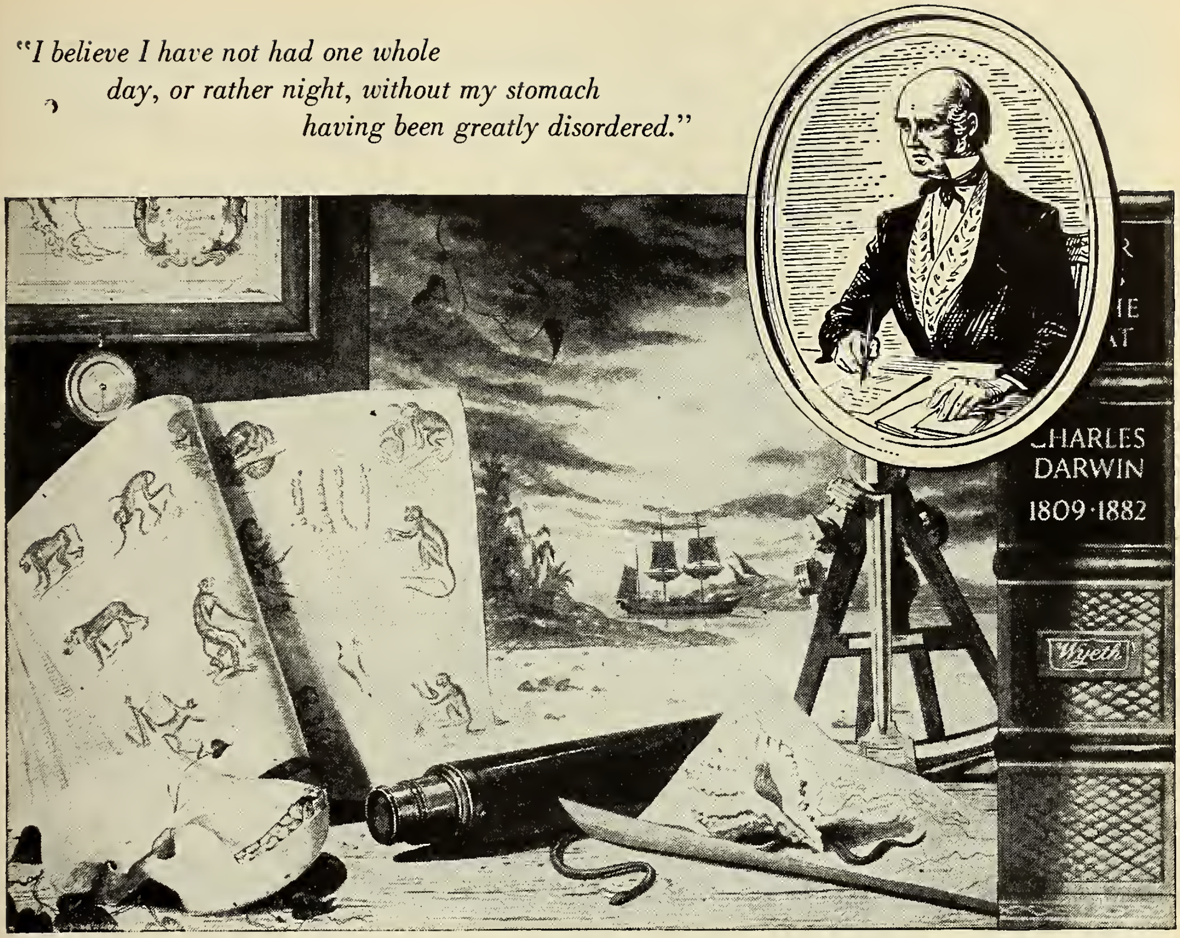

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[1] *Rehfuss, M. E., The Ulcer Life, Clinics 3:480-493 (Oct.) 1944*

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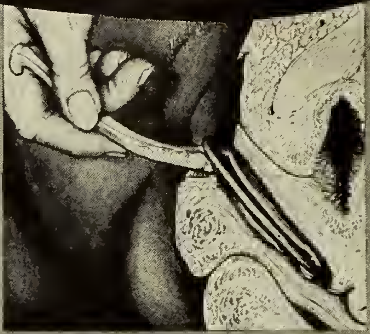

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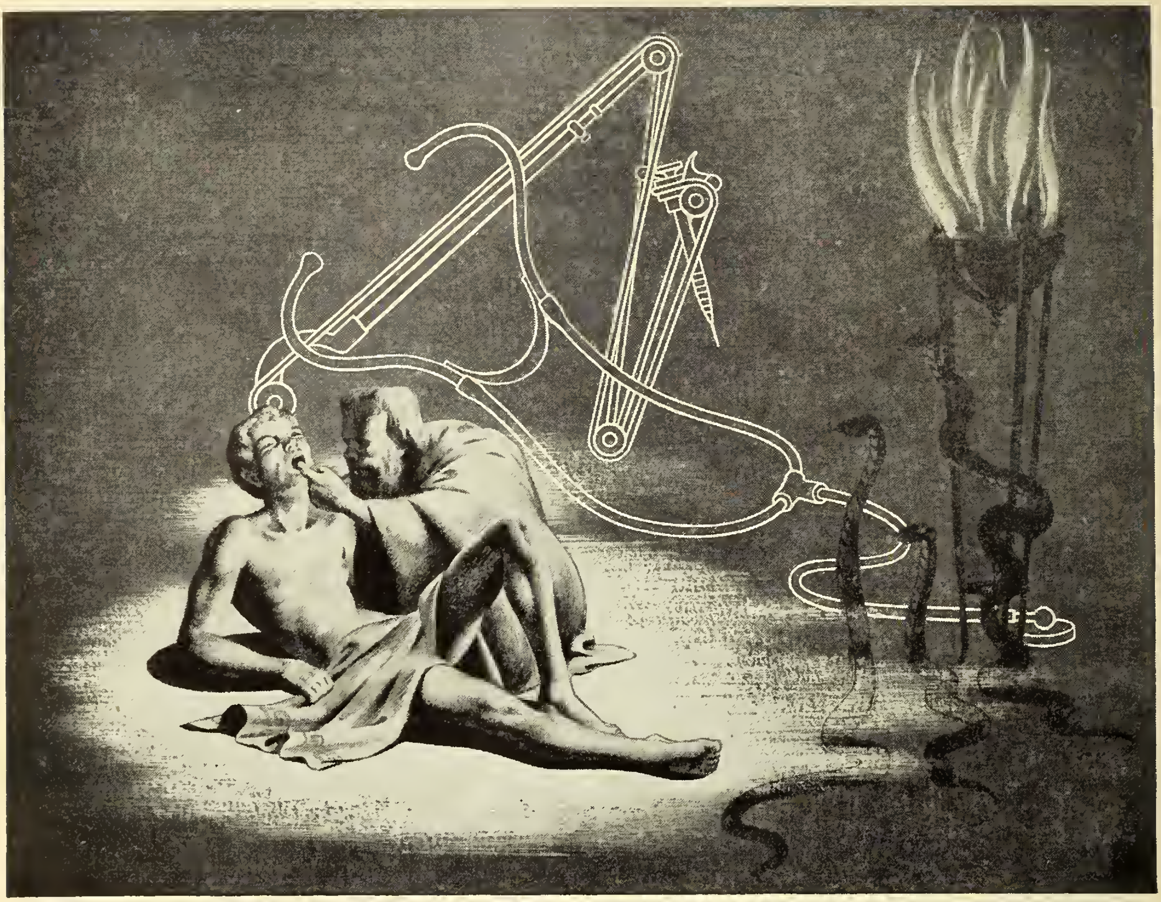

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 September, 1947 No. 9

PROLONGED LABOR, WITH SPECIAL REFERENCE TO POSTPARTUM HEMORRHAGE

ALEXANDER M. WATSON, M.D.

Royalton, Minnesota

PROLONGED labor is always a cause for anxiety on the part of the obstetrician and as time passes without the completion of delivery, he may be apprehensive of serious complications. Labor that extends beyond thirty hours in a primipara or twenty hours in a multipara suggests the presence of complications.

The causes of prolonged labor can be divided into two main classes.

1. In the first class are those variations in the shape and size of the pelvis that obstruct the passage of the fetus and anomalies of the fetus itself, such as hydrocephalus, monstrosities, et cetera.

In this class can be placed also those cases of faulty presentations, such as brow and face, impacted occipitoposterior and transverse positions.

There are still other conditions in this class that can prolong labor, such as fibromata of the uterus, other tumors or cysts in the pelvis, bicornate uterus and a long rigid cervix.

This first group of conditions that tend to prolong labor will not be considered in detail in this paper. If careful and repeated prenatal care is carried out, it will be possible to detect the majority of these causes of prolonged labor before labor starts, and the obstetrician can then be prepared to carry out the proper treatment. This should include x-ray examination to determine the pelvic measurements and the shape and size of the fetal parts. It has been said that early exposure of a three-month fetus to x-ray may cause damage. I have not seen any such damage myself; however, I think that the x-ray of the maternal pelvis and the fetus should be carried out in the last month of pregnancy, as one can then get a better idea of the relative size of the fetal head and the mother's pelvis.

I want especially to emphasize the great importance of a complete and careful prenatal examination. There is no one thing the physician can do for the expectant mother that will be of more value to her than complete and careful prenatal examinations during her pregnancy.

2. The second cause of prolonged labor is the condition of inertia uteri. In inertia uteri there is a failure of the uterus to contract frequently enough or forcibly enough to carry on the labor. This condition I shall discuss in some detail, as it is a common cause of postpartum hemorrhage.

Inertia of the uterus may develop during labor and continue into the postpartum period. It may appear without warning, and in the postpartum period it may be the cause of hemorrhage.

Inertia uteri has been divided into secondary and primary inertia.

Adam G. Sheddon, in the *Medical Journal of Australia,* says: "Secondary inertia is a condition of temporary uterine exhaustion usually appearing in the second stage of labor and resulting from an obstruction, which however is not insuperable." This, he says, is really a protective mechanism. He defines primary inertia as a complication of labor characterized by uterine contractions, which from their onset are sluggish, infrequent and inco-ordinate. This classification seems to define

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Read in a symposium on Obstetrics in General Practice at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 1, 1947.

the condition clearly. He notes that this condition is prone to develop in the older primipara with a rigid os.

John W. Harris, in the *American Journal of Surgery* for February, 1937, says that primary inertia of the uterus is a common type of dystocia and is next in frequency to the dystocia from contracted pelvis. The pains are severe enough to make the patient very uncomfortable, and the physician is often forced by the patient and relatives to hasten or interrupt the labor. Thus, many cases are mismanaged.

Many medical men have observed that primary inertia only becomes evident during labor and that a means of detecting the probability of primary inertia during the last month of pregnancy would be of great value.

In many cases of primary inertia, a diagnosis is made of rigid cervix that cannot dilate, whereas the reason for dystocia is not the cervix but rather the inadequate contraction of the uterus. This false conception of the condition frequently results in mismanagement. A careful examination during the pains which are often apparently severe, will show that the fetal head does not engage or push down during the pain. Instead of attempts at forcing delivery, the patient should be given several hours of complete rest and adequate nourishment; then labor may be resumed.

The cause of primary inertia has not been established.

There are many theories as to the cause of normal labor, among which are the following: (1) increased venosity of placental blood; (2) mechanical distention of the uterus; (3) senility of the placenta; (4) maturity of the fetus; (5) the influence of hormones.

It has been suggested that a disturbance or non-functioning of one or more of these may be the cause of inertia. However, we do know that this occurs more frequently in elderly primipara and in multigravida who are emotionally unstable and apprehensive, so every effort should be made to gain the patient's confidence and reassure her.

In connection with a method or means of foretelling the possible development of primary inertia, some interesting work has been done with the tocograph. The tocograph is an instrument for measuring uterine motility. Many methods have been tried to measure the power of uterine contractions, mostly by some sort of bag inserted in the uterus, vagina or rectum, and attached to a recording device. Obviously, this is not a practical method and exposes the patient to many hazards.

Sandor Larand in 1936 published a description of the second model of his tocograph. The instrument consists of a series of levers actuated by a rod that projects about 5 mm. from the bottom of the box in which the apparatus is contained. The graph strip revolves on a drum, and the writing lever inscribes the graph on the paper. The whole thing is a little larger than a deck of cards. It is placed on the abdomen at the most prominent area and held in place by an elastic belt.

Dr. Douglas P. Murphy, working in hospitals in Philadelphia and in the University of Pennsylvania, has carried out a series of 3,154 tocograph readings in 1,153 individuals. Of the 3,154 readings 1,936 were made before the onset of labor.

This year he published a book on this subject, and he says that he undertook this work because one of the chief problems of the obstetrician is created by inadequate uterine pains, which prolong labor and jeopardize the life of the mother and child. As a result of his tocograph readings, he has made certain observations:

1. He has established a normal graph, both prenatal and during labor.
2. He has established a graph of the normal uterine tension during labor and between pains.
3. He has been able to detect inadequate and irregular contractions in prenatal readings that during labor developed into inertia of the uterus.

He has come to several other interesting conclusions, but as this paper is not a review of the book, I can only say that the book is of great interest and will well repay the reader.

I can remember the time when we had no blood pressure instrument, when there was no electrocardiograph, when there was no basal metabolism machine, when a roentgenogram was a curiosity, obtained only from a static machine or Vulcan coil. So I consider it possible that the tocograph for measuring uterine motility may become a useful and valuable instrument to the obstetrician.

The diagnosis of primary inertia is not difficult when it is established. The pains are irregular, cause a great deal of discomfort, and no progress is made. The fetal parts do not engage and the os does not dilate; all this, notwithstanding the fact that previous prenatal examinations have shown that there are no abnormalities of position, pelvis or fetus that would obstruct labor. We can sometimes anticipate the condition in an elderly primipara or a multipara who has had many children close together. One thing which all patients with inertia uteri have in common is a nervous condition of apprehension and a feeling that it is impossible for them to deliver their babies.

These patients can usually be detected during the earlier prenatal calls, and it is then that the physician should do everything to gain their confidence and build up their morale. This is of vast importance.

The treatment during the progress of labor consists in trying to establish normal labor, and this can often be done. First, the patient should have long rest periods of several hours with the use of sedatives. My favorite is demerol, 100 mg. with 1/100 grain of hyoscin hydrobromide gr. 1/100 and I repeat it if needed in an hour or two. In many cases, following the sedative, labor becomes normal and progresses to a favorable termination. I prefer demerol to the barbiturates.

Brodie C. Nalle, in *Southern Medicine and Surgery* in 1941, discussing the subject of prolonged labor, states that the cause of inertia of the uterus may be due to: (1) a disturbed autonomic system; (2) calcium deficiency; (3) a combination of the two.

The autonomic nervous system, consisting of the sympathetic and parasympathetic nerves is an involuntary system and innervates the uterus. This nervous system is susceptible to emotions of anger, fear, anxiety and suppressed emotions. Thus the emotional instability of the patient will affect the work of the uterus.

He was impressed by the fact that the demand for calcium during the last ten weeks of pregnancy was very great and that the patients often exhibited clinical evidence of calcium deficiency such as cramps in the calves of the legs, frequent periods of false pains, and paresthesias. The estimation of diffusible blood calcium is difficult, but the clinical evidence is reliable. Normal blood calcium which is available for use has a sedative effect on the sympathetic system, and if adequate, the uterus contracts in a normal manner. On this basis, he gives the patient calcium gluconate with vitamin D from the third month on. It has been my practice for several years to give calcium gluconate grs. 30 daily for the last trimester, with vitamin D. In the majority of cases, I am satisfied that this is of great benefit and the incidence of nervous, apprehensive patients, with inertia uteri is not so great as formerly.

The use of oxytocic drugs in prolonged labor, due to primary inertia, deserves mention. These drugs are potentially very dangerous to both mother and child and therefore should not be used unless the cervix is fully dilated and it is certain that there is no mechanical obstruction to the delivery of the child. This should be the rule in the use of these potent medicines. The oldest of the oxytocics is ergot. It was first described one hundred years ago by Prescott. The alkaloid ergonovine or ergotrate is the preparation used. It is used almost entirely postpartum. In England and Europe this alkaloid is called ergometrine. In 1906 Dale discovered that the extract of the posterior pituitary gland had a remarkable action as an oxytocic. Since then it has become universally used. Given by intramuscular or intravenous injection, it produces strong and regular uterine contractions. The following rules, however, must be followed or the uterus may rupture:

1. Pituitary extract should not be used if the intrauterine tension is high or if the uterus is in a state of tetanic contraction.

2. It should not be used if the os is not fully dilated, or easily dilatable.

3. It should not be used if there is any obstruction to labor such as a deformed pelvis, or anomaly of, or excessive size of, the fetus.

4. The dose should be small (about 2 minims) of obstetrical pituitrin.

With these precautions, pituitary extract is a very useful drug and will often cause normal strong contractions that will terminate the labor, in the presence of primary inertia.

There are other oxytocic drugs, such as estrogens and quinine but ergot and pituitary extracts are the most commonly used.

In many cases of primary inertia, due to the condition of the mother or fetus, it may be inadvisable to use oxytocics, so some form of obstetrical operation may be needed. Forceps in the midpelvis or at the outlet are familiar to all of us and are generally successful. Using high forceps is an operation that is dangerous to mother and child and in my opinion a podalic version is preferable. This has its dangers but if done carefully is preferable to high forceps. In these cases, due to the long labor and probable examinations and loss of the liquor amnii, I would consider cesarian section contraindicated as the danger of sepsis is great and peritonitis is very likely to occur.

The most serious complication that occurs as a result of prolonged labor from primary inertia, is postpartum hemorrhage. This is the direct result of weak and ineffectual contractions of the uterus, extending into the postpartum period. Postpartum hemorrhage is second only to sepsis as a cause of maternal mortality. This may result in a great loss of blood in a short time or a steady trickle that may not be alarming, but may eventually result in death, if not checked.

Odell, Randall and Scott, in an article published in the *Journal of the AMA* of March 15, 1947, on this subject, state that when the total loss of blood (measured and estimated) exceeds 600 c.c. or more, postpartum hemorrhage is diagnosed. In a long series of cases they found the majority of those listed as prolonged labor were in the inertia group. They further stated that the incidence of postpartum hemorrhage was higher in the mothers who had operative interference of any sort to conclude the labor, than in those who delivered spontaneously. In such instances they give early a 5 minim dose of pituitary extract followed by ergotrate. If this is not successful, they advocate douching the uterus with cold sterile water and tamponade. In the treatment of postpartum hemorrhage it is well to review the proper procedure notwithstanding the fact that it is a familiar subject.

If hemorrhage develops after the delivery of the placenta, the uterus should be grasped firmly and massaged to induce contractions. Often one can feel the uterus relax and become soft, when the contraction fails. The nurse is instructed to give pituitary extract 5 minims intramuscularly, followed by ergotrate 1/320, by the same method. If the bleeding continues, the birth canal is explored for lacerations of the vagina and cervix. If found, they should be sutured, which will control the bleeding. If, however, the bleeding is from the uterus, the hand should be inserted into the uterus and any secundi that are present should be removed. I found a placenta succenturia in one instance. In case the patient is still bleeding, it will be necessary to pack the uterus. In our delivery room we have, at all times, a sterile pack seven yards long and three inches wide consisting of several thickness of gauze. This is enough to pack the uterus tight as well as the vagina. If the mother has reached this stage of bleeding, she is in more or less shock from loss of blood, so plasma is given and arrangements are made for blood transfusion. The patient's blood should be typed and the Rh factor ascertained so that suitable blood can be used. Some writers have stated that packing of the uterus is an outmoded procedure, but I think that it is often a life-saving treatment and is the only method for controlling some cases of hemorrhage. It has been said that it is very liable to cause infection. This is not so likely to occur if conducted in a modern hospital. Also the infection can usually be controlled by the use of penicillin, sulfonamides, and blood transfusions. I therefore continue to pack the uterus if the need arises.

Postpartum hemorrhage occurring before the delivery of the placenta is equally formidable. The first thing to do is to deliver the placenta. The Crede method of expulsion should be tried but as this often fails, it becomes necessary to do a manual separation. John B. Pastore, in an article on postpartum hemorrhage in the *American Journal of Surgery*, states that the placenta should be separated by the ulnar side of the hand, starting at the top of the fundus and separating from above downward. In this way, the uterus contracts on the retreating hand and placenta and avoids the bleeding that occurs in the reverse procedure. He says, further, that if in case of inertia, the placenta has separated but is not expressed, clots accumulate and blood loss is great. He states that many cases are mismanaged at this stage. First, it is not recognized that the placenta has separated while a perineal repair is being carried out. Second, efforts are made to express the placenta by pressing the uterus down into the pelvis and causing pressure on the uterine veins, thus increasing the bleeding. He says no repairs should be attempted till the placenta is expressed, and he condemns the practice of using the uterus as a piston to express the placenta. When the uterus changes from a discoid shape to

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THE MANAGEMENT OF OBSTETRIC EMERGENCIES

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NOWHERE in the entire field of medicine can dire emergencies develop as suddenly and acutely as in obstetrics. Twenty-five years ago there were few specialists in this field. Most women were delivered by the family doctor or kindly neighbor women. Today, a growing number of women in the United States recognize the better care provided by physicians especially trained in obstetrics, and the demand for maternity care by specialists is increasing. However, the general practitioner today is conducting and, I think, always will conduct the vast majority of childbirths in the United States. Therefore, the management of obstetric emergencies lies in our hands as well as in the hands of specialists.

When we, as practicing physicians, accept the responsibility of taking care of a woman through her prenatal care and labor, it behooves us to be adequately prepared for any emergency that may arise. The phrase, "Too little and too late," applies all too often to tragedies occurring in the delivery room.

As many obstetric emergencies involve hemorrhage and/or shock and transfusion; and as time is such an important factor in these conditions, the Rh status of every pregnant woman should be determined during the early part of her pregnancy. The pregnant woman's blood should be tested for hemoglobin content, Rh factor, and Wassermann reaction, the first time she presents herself for prenatal care. If the patient is Rh negative, an Rh negative donor in the proper group must be found and the name of the donor put on her record. Some centers go so far as to determine the blood group of each pregnant woman. When a woman goes into labor, plasma should be on hand to combat shock and hemorrhage while blood is being obtained for transfusion.

Let us quickly review the emergencies which well may arise!

Placenta Previa

This condition occurs in at least one of 300 obstetric patients. When the placenta is implanted in the region of the internal os, partial detachment with hemorrhage results from the tissue realignment incident to formation of the lower uterine segment. The initial hemorrhage appears at or before the onset of labor, and every patient with placenta previa must be considered as a candidate for fatal hemorrhage; thus—

1. A patient with suspected placenta previa should be immediately hospitalized.
2. Her blood should be typed and cross matched.
3. A donor should be selected and ready for immediate blood transfusion.

Cystography in the diagnosis of placenta previa was introduced in 1934 by Ude, Weum, and Urner, who outlined the soft tissue space between fetal presenting part and bladder by filling the latter with an opaque medium. The technique used is as follows:

1. Empty bladder with a catheter.
2. Introduce 40 c.c. of sodium iodide solution into bladder, clamp catheter.
3. Anteroposterior film with tube centered on bladder and table tilted, feet down ten degrees from horizontal.
4. Unclamp catheter, allow bladder to drain. Remove catheter.

The interpretation of the roentgenogram in vertex presentation may be difficult, and in breech and transverse presentations it is virtually impossible.

Dipple and Brown, in 1940, were able to visualize the placenta with a single roentgenogram in about 90 per cent of 200 pregnant women by using a soft tissue technique. Interpretation and x-ray technique requires experience for accuracy. The x-ray method represents a distinct advance in diagnosis but for accuracy cannot displace sterile vaginal examinations. There is only one absolute diagnosis of placenta previa—namely, digital palpation of the placenta through the cervical os. When the gloved finger introduced through the os cannot feel placenta, the patient does not have placenta previa.

A note of warning! Digital examination must

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never be performed until the delivery room is completely set up for emergency delivery, since palpation of the placenta occasionally produces more bleeding.

Delivery is mandatory after repeated bleeding. The method of delivery may be vaginal or abdominal and the choice of procedure depends largely upon the probability of fetal salvage.

If the fetus is viable, a cesarean section should be performed on all cases of complete placenta previa. If the placenta previa is marginal or incomplete or if the fetus is not viable, one may resort to vaginal delivery. Acceptable vaginal methods include:

1. Spontaneous labor with or without rupture of membranes. Spontaneous labor may be brought about by medical means and artificial rupture of membranes.
2. Scalp traction. Personally I have never resorted to this means of delivery.
3. Insertion of a hydrostatic bag.
4. Braxton-Hicks version. This, of course, should never be attempted before full dilation of the cervix.

Except for the spontaneous labor with or without antecedent rupture of membranes, all these methods increase the fetal hazard.

Premature Separation of the Normally Implanted Placenta

(Ablatio or abruptio placenta)

These terms are reserved for the separation of all or part of the normally implanted placenta occurring after the twenty-eighth week of gestation and prior to the onset of the third stage of labor. The incidence of premature separation is variously reported between 1:100 and 1:500.

Symptoms.—A moderate amount of vaginal bleeding usually associated *with pain* indicates partial placental separation. If the placenta is implanted on the anterior wall of the uterus, there is frequently a circumscribed area of uterine tenderness.

Vaginal examination, again under sterile precautions, revealing no evidence of placenta previa, confirms the diagnosis by exclusion.

Treatment.—As with placenta previa, the value of blood transfusion cannot be overemphasized. Even with mild vaginal bleeding, the physician must make preparation even though subsequent events render transfusion unnecessary. In every case, management depends upon the rate of bleeding and the condition of the cervix. Minimal bleeding requires little or no treatment. When bleeding is at a rate demanding delivery for hemostasis, whether we use the abdominal or vaginal route depends upon the condition of the cervix. With an uneffaced, firm and tightly closed cervix, cesarean section is mandatory.

Cervical effacement and partial dilation generally motivate vaginal delivery. Artificial rupture of the membranes institutes labor and the bleeding is controlled by the contracting uterus. If necessary, small doses of pitocin may be administered with relative safety. Never give more than one minim of pitocin for the initial dose! If these measures do not control the bleeding, insertion of a Voorhees bag to produce compression on a possible low-lying placenta, and the occasional employment of an abdominal binder, to raise intrauterine pressure to parity with the blood pressure, may be beneficial.

Uteroplacental Apoplexy or the Courvelaire Uterus

This rare accident is too dramatic to omit, although the average practitioner will probably never encounter it. Retroplacental hemorrhage is sudden, extensive and forceful, and produces acute symptoms of profound shock and boardlike uterus. The typical boardlike uterus is not simulated by any other condition. Immediate cesarean section is the treatment of choice; despite known presence of a dead baby. Why cesarean without fetal salvage? In this condition blood infiltrates directly into the uterine muscle, dissociates the muscle fibers and inhibits uterine contractility. If the uterus will not respond to oxytocic drugs, a hysterectomy must be done.

Postpartum Hemorrhage

One just cannot discuss obstetric emergencies and omit postpartum hemorrhage. As we are bringing the toxemias of pregnancy and the puerperal infections under control, hemorrhage is assuming a relatively more important role in maternal mortality.

It is unfortunate that accumulated experience is not as impressive as personal experience and that some women must die to make some of us "hemorrhage conscious."

The emergency tends to appear at a time the attendants are relaxing. The baby is born, the labor is all but concluded, when suddenly a desperate fight to save the patient's life ensues.

Preparedness and the prompt institution of treatment can all but eliminate one of the most frequent causes of maternal mortality. Deaths from hemorrhage are largely preventable.

As a prophylactic measure, especially in hospitals without blood banks, the routine practice of typing all obstetric patients prenatally is recommended. Also, the Rh status of each obstetrical patient should be established and special precautions taken should the patient be Rh negative.

Prolapsed Cord

Prolapse of the cord in vertex presentation is usually an indication for immediate delivery, provided the child is alive and the cervix is dilated enough. This implies six to seven centimeters dilation in multigravid and eight to nine in primigravid women. With dilations less than these, hasty extraction of the child usually leads to severe cervical lacerations and seldom results in a living child. Delivery by forceps is justifiable only if the head lies at mid-plane or below. With higher stations, the procedure of choice may be podalic version and extraction.

If the cord has prolapsed and the proper dilation has not been obtained, the patient should be placed in a deep Trendelenburg's position and closely watched until the cervix is dilated sufficiently to permit the necessary maneuvers. Replacement of the cord through a partially dilated cervix is almost universally unsuccessful and I believe should not even be attempted. Prophylactic doses of penicillin or one of the sulfa drugs should be given to each patient with cord prolapse to prevent ascending infection.

Prolapse of the cord occurs once in approximately 150 deliveries and its occurrence depends upon three factors: the presence of an excessively long cord; inadequate filling of the pelvic basin by the presenting part; and ruptured amniotic sac.

Tetanic Contraction of the Uterus

Tetanic contraction of the uterus is a possible sequel to administration of pituitary extract. Doses as small as one minim may produce tetanic contractions enduring as long as five minutes. Other factors, including long or obstructed labors, are operative in causing this condition unless the uterus can be relaxed. Two dangers become imminent, rupture of the uterus and asphyxia of the child. The time-honored remedy is ether anesthesia. Magnesium ions have a relaxing effect and the intramuscular administration of 2 c.c. of a 50 per cent aqueous solution of magnesium sulfate may be of benefit.

Bandl's Ring or Contraction Ring

The upper active contractile segment of the uterus and the lower passive segment are separated by a physiologic ring of muscle which normally is of little significance. In mechanically obstructed labors, the upper segment progressively becomes thicker and the lower thinner. This produces a gradual elevation of the physiologic ring above the symphysis.

In rare instances pathologic constriction of this physiologic ring about the child occurs. In these cases a spastic stricture of uterine muscle is produced. Diagnosis is made by internal palpation. The ring will probably not disappear but may be sufficiently relaxed to permit delivery following the intravenous injection of five minims of 1:1000 epinephrine solution. Deep ether anesthesia also has a relaxing effect.

Uterine Rupture

Rupture of the uterus occurs once in 2000 to 3000 cases and may be incomplete or complete. Despite its infrequency, discussion of the accident is included because of its dramatic nature and potential dangers.

The fetal mortality approaches 100 per cent and the maternal risk is considerable.

The principal etiologic factors include: previous cesarean section; previous cervical operation or repair; obstructed labor with overdistended uterine segment and operative procedures, especially internal version.

The diagnosis of uterine rupture is based upon sudden, acute and lancinating pain, with abrupt cessation of uterine pain and cessation of labor, and the rapid development of hemorrhage and profound shock.

The rupture of a previously intact uterus may cause a dire obstetric emergency from shock and hemorrhage, and death within the hour unless heroic measures are applied.

Two methods of treatment are current: conservative and radical. Conservative treatment consists of either uterine and vaginal tamponade, or laparotomy with suture of the rent. Hysterectomy represents the radical method of treatment. The latter is much preferred and is the generally accepted treatment. Its advantages are numerous and offers the best chance of recovery for the mother. Nowhere in the entire field of medicine is there such vital need for rapid mobilization of facilities and early administration of plasma and blood as in the emergency of acute uterine rupture with severe hemorrhage. Sometimes rapid hysterectomy is demanded despite falling blood pressure. Plasma and blood must be given while the operation is being performed.

Inversion of the Uterus

Inversion of the uterus is a rare obstetric complication but mention is made here because it appears with sufficient frequency to make it necessary for anyone doing obstetric practice to familiarize himself with therapeutic procedures for this condition. Reported incidence in various parts of this country has ranged between 1:740 to 1:16,000 deliveries.

Attempts to expel the placenta before its separation either by pushing from above or by pulling on the cord may be a predisposing cause although the fundamental etiologic factor is unknown.

The symptoms are shock and hemorrhage associated with absence of the uterine body from the abdominal cavity and its presence in the vagina as a rounded tumor, a mass whose upper end is constricted by the encircling cervix.

Active and long-continued shock therapy is all-important! The immediate replacement of the inverted uterus under deep anesthesia has given the unfavorable mortality rate of 10 to 43 per cent. A few writers have pointed out that this is a dangerous and unnecessary procedure.

Recent treatment has been to deal with the inversion *per se* at any suitable time after the patient is restored to normal health, preferably four to twelve weeks following the acute episode. The inverted uterus may be left entirely alone unless the extent of the bleeding from it is such as to require the application of a tight vaginal pack. Treatment of the shock is the all-important thing. If it is not present, it should be anticipated. Multiple blood transfusions may be required not only to combat the shock but also to hasten the restoration of normal hemoglobin levels. Systemic chemotherapy should be instituted at once as a prophylactic agent. Local infection should be further combated with daily application of local antiseptic vaginal packing. After four to six weeks in the hospital, the well-involuted uterus may then be restored surgically to its normal position or removed.

In conclusion, I wish to place emphasis on being prepared for the emergencies that may be expected in an obstetrical practice. We, as general practitioners, conduct the vast majority of childbirths. Emergency is a *sudden* condition—calling for *immediate* action, and time is an all-important factor. By its very nature, we cannot place the care of emergencies in the laps of specialists.

DOES IT PAY TO WORK HARDER?

Does it pay to work harder? For the man who earns $4,000 above his exemption, it manifestly pays to work harder and earn $2,000 more, for Uncle Sam lets him keep three dollars out of every additional four that he gains by his hustling. The man making $8,000 above his exemption will probably feel it worth while to add $2,000 to his income, for he is still privileged to keep two out of every three added dollars. However, for the man having an income of $15,000 above his exemptions, the worthwhileness of striving to take in another $5,000 raises serious questions in his mind, for, in his case, the Federal Government takes more than half of the added gains. One can hardly expect the man receiving $100,000 to be much interested in doubling his income, for, if he does, he can only keep for his own use one dollar out of every additional seven.

Obviously, the present income tax law constitutes an effective device for preventing the most efficient business and professional men from fully utilizing their talents. The law acts, therefore, as a damper on production, and hence lowers the income of the average citizen.

In addition, it prevents him from accumulating capital, and thus hampers not only his progress, but that of the nation as a whole. These are the results which advocates of progressive taxation persistently refuse to consider. There are none so blind as those who will not see!

Willford I. King, author of "Wealth and Income of the People of the U. S." and Professor Emeritus of Economics at New York University.

From Insurance Economics Survey, August, 1947.

THE GENERAL PROBLEM OF ANESTHESIA IN OBSTETRICS

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THE problem of providing anesthesia to women in childbirth and of performing the safe delivery of newborn infants is a major responsibility, especially for the general practitioner. In hospitals where obstetric facilities are readily available the teamwork between the anesthesiologist and the obstetrician simplifies somewhat the general problem of handling the parturient mother.

There are certain factors which should be considered in the choice of any general or local anesthetic, analgesic or amnesic agent. They are as follows:

1. What is the physiopharmacologic action of the agent on both maternal and fetal structures?
2. What fetal or maternal diseases or abnormalities exist which may alter the selection of certain agents?
3. What agent or agents and method are best suited to the emotional and physical status of the mother?
4. Is the method used one which will afford the greatest safety to the mother and the infant?

Certain criteria should be present in the choice of any agent or method. These agents should possess adequate properties to obtund the pains of labor without any untoward systemic reaction. Secondly, the agent should be reasonably prompt in its action and should not possess cumulative effects. Thirdly, effective means of counteracting an overdose or idiosyncrasy to the agent should be available.

It might be pointed out at this time that the wisdom or advisability of the attempts to relieve the pains of labor totally have been seriously questioned by some authorities on this subject. De Lee and Greenhill have emphasized repeatedly the price that is paid to make childbirth painless. Heaton in writing on obstetric anesthesia and analgesia commented: "Perhaps, as the psychiatrists have suggested the inordinate demand for painless childbirth is symptomatic of the anxiety and insecurity existing among certain groups in our culture today. It is questionable from a psychologic standpoint whether the passive role assigned to women in painless childbirth is a desirable one."

Opinions of various investigators with respect to the effects of certain agents are occasionally controversial, so that the comments made here are a composite opinion and not one individual's conviction.

Many methods of analgesia and anesthesia have been proposed but some of these are limited in their practical application because they are too technical and complex. Continuous caudal anesthesia might be mentioned as an example of a highly technical procedure which is very valuable but has limited application. In the conduct of the average uncomplicated labor and delivery the obstetrician and the anesthesiologist, singly or together, focus their attention on amnesic, analgesic and anesthetic agents which will obtund pain and produce at least relative amnesia. In the first stage of labor analgesic and amnesic agents are usually sufficient. In the second and third stages of labor anesthetic agents are required, as a rule.

First Stage of Labor—Amnesic and Analgesic Agents

At present, scopolamine in conjunction with a barbiturate such as pentobarbital sodium is one of the most effective combinations. The dose of scopolamine is 1/150 or 1/100 grain (0.00043 or 0.00065 gm.) hypodermically administered when labor pains are well established and regular and there is effacement and beginning dilatation of the cervix. Simultaneously 1½ to 3 grains (0.1 to 0.2 gm.) of pentobarbital sodium are given orally. The administration of scopolamine is repeated about one hour after the initial injection. Some authorities recommend three doses of 1/100 grain (0.00065 gm.) of scopolamine alone subcutaneously administered at intervals of half an hour when labor is established. The duration of action of scopolamine is about two hours in the dose mentioned. In prolonged labor additional amounts of scopolamine may be required at intervals of two hours. At least one drawback to this method is the occasional occurrence of extreme excitability and stimulation of the patient, necessitating constant nursing attention.

From the Section on Anesthesiology, Mayo Clinic, Rochester, Minnesota.

Read in the symposium on Obstetrics in General Practice at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 1, 1947.

Another combination of agents which has more analgesic effect as well as amnesic action is the use of scopolamine, barbiturates and demerol. The experience of several investigators has shown that the combination of demerol and scopolamine causes less fetal respiratory depression than scopolamine and demerol plus a barbiturate. A suggested regimen with these agents is the hypodermic injection of 100 mg. of demerol along with 1/150 grain (0.00043 gm.) of scopolamine when the labor pains are strong and regular. If these two agents are not quite sufficient a barbiturate can be given orally or rectally as a supplement. The administration of demerol and scopolamine may be repeated at intervals of three to four hours.

At this point a word should be said about morphine and pantopon. In general, these opiates should not be used within less than two hours from the time of delivery, since they cause fetal respiratory depression, and when a general anesthetic agent follows in sequence the incidence of asphyxia neonatorum is definitely increased. This is particularly true when one is dealing with premature infants.

Rectal analgesia should be mentioned because it is liked by many obstetricians and is a well-accepted method of producing analgesia in labor. Ether in oil (65 per cent ether—35 per cent oil), the original Gwathmey technique, has been modified to include paraldehyde, avertin, chloral hydrate and pentothal sodium as rectal analgesics. The use of intravenous anesthesia is not recommended, as a rule, in labor because of the rapid and concentrated action of the agent on both fetal and maternal respiration.

Of the inhalation anesthetic agents for obstetric analgesia both the volatile agents, such as ether, chloroform and divinyl ether, and gases, such as nitrous oxide, ethylene and cyclopropane, are employed. Whereas various techniques of administration of these agents have been described, including self-administration, they are usually administered during the second stage of labor when anesthesia rather than analgesia is required.

Analgesia and Anesthesia in the Second and Third Stages of Labor

Multiparous women give birth frequently spontaneously without the addition of any agent other than the basal analgesia supplied. In most cases, however, some form of general anesthesia or regional anesthesia is required. Time-honored drop ether and chloroform are used extensively, particularly in deliveries at home. In hospitals where the assistance of an anesthesiologist is available many combinations of agents may be used. During delivery when the presenting part distends the perineum the depth of general anesthesia should be carried to plane 1 or 2 of the third or surgical stage of anesthesia. Uterine contractions are not abolished at this level of anesthesia but such procedures as episiotomy and application of forceps can be done without pain to the patient. Nitrous oxide will usually require the addition of ether vapor to provide safe anesthesia in the second and third stages of labor. One should avoid using any concentrations of nitrous oxide greater than 80 per cent along with 20 per cent oxygen. Cyclopropane and ethylene are best suited for the terminal stages of labor and should be administered carefully by the closed technique.

Regional Anesthesia

Many procedures have been and are being used, including pudendal block, transsacral block, paravertebral block, caudal block, local infiltration and low spinal anesthesia. Certain techniques require specific training, skill and experience; others, such as local infiltration and pudendal nerve block require minimal specialized technique. Tucker and Benaron, Cleland, Lull and Hingson, Lundy and Tovell and others have described their techniques, and the merits of these techniques are well established. For example, pudendal nerve block is a successful type of block anesthesia for many obstetric operations, including spontaneous delivery, low forceps application, episiotomy and perineorrhaphy. The contribution of Hingson and his associates has shown that the continuous caudal method has a definite place in obstetric anesthesia. It should be performed only by those persons familiar and sufficiently trained in regional anesthesia to know the indications and contraindications to this method. Caudal anesthesia is applicable chiefly to hospitalized patients. Low spinal or saddle anesthesia with hyperbaric solutions is becoming more and more widely used. Any one of several local anesthetic agents may be used; for example, procaine hydrochloride or pontocaine hydrochloride. If procaine hydrochloride is used 50 to 75 mg. are dissolved in 2 c.c. of 10 per cent solution of dextrose. After a lumbar puncture at the level of the third and fourth lumbar interspace, this mixture is diluted with an equal volume of spinal fluid and injected slowly. The injection is made with the patient in the sitting position. Anesthesia is established quickly and lasts for one to one and a half hours. Postpartum bleeding is diminished and the babies have little, if any, respiratory or circulatory depression.

Cesarean Section

Cesarean section presents a difficult problem as far as the choice of anesthesia is concerned. What may be best for the mother may not be best for the fetus. Prolonged general anesthesia leads to marked fetal respiratory depression and often to death of the fetus. Improperly controlled spinal anesthesia has led to disastrous results. Local infiltration or block anesthesia of the lower abdominal wall in combination with inhalation anesthesia or intravenous anesthesia at the time the uterus is opened has been advocated by many authors. If the timing of the general anesthetic agent is correct, little, if any, depression of the unborn child occurs. The objection to this procedure by the mother is the main obstacle.

Hingson has advocated continuous caudal anesthesia utilizing posture to advance the anesthesia high enough to permit incision of the abdominal wall above the umbilicus. The continuous spinal technique has offered another method of anesthesia which, if performed carefully, will permit safe and satisfactory results for the mother and child. There is usually less loss of blood in cesarean section with local, caudal or continuous spinal anesthesia than with inhalation anesthesia. Of the inhalation anesthetics, if they alone are used, cyclopropane is best as far as the baby is concerned but resuscitation procedures are much more common in these cases than with regional methods or combinations of regional and general methods.

Anesthesia in Complications of Pregnancy

Several outstanding complications are noteworthy; namely, (1) hypertensive cardiac disease, (2) nephritis, (3) pre-eclampsia and eclampsia, (4) pernicious anemia, (5) leukemia, and (6) other blood dyscrasias, including hemorrhagic diathesis. In the presence of these complications local or regional anesthesia is to be preferred to general anesthesia, particularly with ether, chloroform or avertin.

Conclusions

If I may quote from an anonymous editorial:[3]

"The obtundation of pain and discomfort incidental to parturition must necessarily occupy a secondary role in most obstetricial deliveries. It does not follow, however, that the pains during labor and delivery usually do not belong in the same category as pain associated with disease or that caused by surgical operation. Labor is not a disease, and expulsion of the fetus is not always a surgical operation. They usually constitute a physiologic process.

"The medical profession and its scientific allies have not ignored the pangs of the parturient. In fact efforts have been so generous at times that pain relief seems to be exalted from its secondary role in obstetrics to a place equalling the more essential functions of the accouchement.

"During all the anesthesia years every new drug or method introduced to facilitate surgery or allay pain has found its way into obstetric practice. The use of ether and chloroform during childbirth had a formidable place in early controversies surrounding the acceptance of anesthesia but the drugs have played an important role in obstetrics since. The lay press and non-medical benefactors formulated and expressed opinions on the merits of the early pain-relieving procedures. They have followed through with similar journalistic efforts with the advent of every new departure. Not infrequently obstetricians have resented the publicity and particularly the inaccuracies published for public edification. Their remonstrances have led the modern accredited press to more conducive reporting based upon statements that may claim authority. However, enthusiasm may often obscure the acumen of the physician as well as the journalist."

It should be our aim to make pain of the parturient as easy as possible, constantly keeping in mind the safety of the newborn and the mother.

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MEDICAL THERAPY IN ULCERATIVE COLITIS

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THE term ulcerative colitis has been used in connection with a variety of lesions of the colon characterized by inflammation and ulceration. Many writers[7,9,10,13] do not attempt to classify or to differentiate these conditions except along general lines, but Bargen and associates[1,2,3] have long contended that only by classifying them according to etiology can we properly understand and treat these situations. It is obvious that an etiological basis can be found and demonstrated in many cases of ulcerative colitis, i.e., those due to tuberculous, amebic, bacillary and venereal lymphogranulomatous infections.

There is considerable uncertainty about the largest group which Bargen has classified under the term, "streptococcic ulcerative colitis" and which he differentiates from the regional colitis and the colitis of unknown origin. Others classify these conditions under one heading, contending that they are different manifestations of the same disease. Kiefer and Jordan[10] have defined this type as "a chronic disease of unknown etiology in which there is a diffuse inflammatory reaction involving all coats of the colon and rectum, either as a whole or as a part—subject to unexplainable remissions and exacerbations—and complicated by varying degrees of sepsis, ulcerations and necrosis of the mucosa which often results in extensive fibrosis of the intestinal wall." Bockus[9] defines it as "a clinical syndrome ushered in with a suppurative, ulcerative inflammation of the colonic mucosa with or without a recognizable initial specific bowel infection, but associated with a bacterial or toxic invasion of the bowel wall, conditioned by varying immunologic, allergic, nutritional and nervous phenomena." It seems obvious that no single etiologic agent obtains and that various factors enter in. Influence of nutritional and emotional states[4,6] and allergic manifestations[14] must be given consideration along with infectious and toxic factors. The one consistent and constant fact about this type is that the reaction in the wall of the bowel, viewed through the proctosigmoidoscope or demonstrated by the roentgenogram, is characteristically diagnostic and not usually confused with other clinical conditions. The lesions begin in the most distal portion of the rectum and progress upward. Whether a small part of the colon or the entire colon is involved, the lesions are continuous, uninterrupted and affect the entire wall of the bowel. In the early stages the mucosa presents a diffuse congestion and edema with tiny submucosal hemorrhages. In the chronic stages the mucosa has a dull red appearance with a rough granular surface which bleeds with the slightest trauma. Necrosis, ulceration and sloughing of the mucosa are only seen in the most severe forms. Anal and peri-anal lesions are common complications and polypoid changes in the mucosa are late sequelae. Malignant changes undoubtedly take place in some of these. Adenocarcinoma of the bowel has been reported by Kiefer and Jordan[10] in 7 per cent of chronic cases of ulcerative colitis. Polypoid changes probably different from the usual colonic polyps had developed in these cases. The relationship of real polyps to carcinoma is well known.

Because of the extensive involvement of the wall of the bowel, the roentgen picture is characteristic, especially in the chronic form. There is a narrowing of the lumen, loss of haustral markings and a shortening of the colon, giving it in the later stages the appearance of a smooth tube. In the early and mild cases where the disease is limited to the rectum, the roentgen findings may be normal.

The clinical manifestations are extremely variable, depending upon the stage of the disease and the extent of the involvement of the colon. In the mild cases with involvement of the rectum or rectosigmoid, general systemic symptoms may be mild or absent. There may be normal bowel movements with additional purulent bloody discharges occurring two to three times a day. As the disease progresses, the rectal discharges increase until diarrhea results and, correspondingly, general systemic effects become apparent. In the severe fulminating form the disease progresses rapidly, with severe local and systemic effects.

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There may be high fever, frequent bloody discharges from the rectum, great prostration and rapid decline. The disease may progress slowly or remain latent for long periods, only to become active again. Often the insidious form may become fulminating following some intercurrent infection or emotional disturbance.

Regional ulcerative colitis and ulcerative colitis of unknown origin are considered by Bargen[2] as being separate and distinct from the streptococcic variety. Others[5] feel that they are atypical manifestations of the same disease. In the regional type any part of the colon may be involved, ranging from 6 to 12 inches in length and with normal adjacent bowel. The disease may be acute or chronic, occasionally fulminating in character. The symptoms will vary according to the severity and chronicity of the disease. There is usually diarrhea which may be mild or moderately severe and is often preceded by abdominal cramps or pain localized in the lower abdomen, more often in the lower right quadrant of the abdomen. The cramps and pain are usually relieved by evacuation of the bowel. The stools are as a rule mushy, liquid or mucoid in character and may or may not contain blood. Gross hemorrhage, while rare, may occur. General manifestations are generally apparent and at times are more severe than those seen in the average diffuse type. In the more severe cases they are characterized by fever, weight loss, anemia and occasionally by ocular, joint and cardiac complications. The etiology is obscure and may well be similar to that of the generalized form of chronic ulcerative colitis. The diagnosis depends on the clinical picture, characteristic roentgen findings, and the absence of a specific etiological factor.

Amebic ulcerative colitis caused by the Endamoeba histolytica involves primarily the cecum and the flexures of the colon although the entire bowel may be involved, in which case the lesions are visible through the proctoscope. They present a characteristic picture of punched-out areas with raised margins surrounded by a hyperemia and covered by mucus. Between the ulcers the mucosa appears normal. The involvement is mainly in the mucosa and not in the wall of the bowel. While the symptoms as a rule are mild and general systemic effects are not noted, severe manifestations may be observed. Bleeding occurs relatively late in the disease instead of being present as one of the early symptoms. The roentgen findings are usually characteristic and a great help in the diagnosis. Early in the disease there may be some narrowing and irritability of the cecum and ascending colon. Later the cecum becomes coned or narrowed and irregular narrowing may be noted in the entire ascending colon, differing from the smooth diffuse narrowing encountered in the streptococcic type. The demonstration of the Endamoeba histolytica in motile or cyst form will confirm the diagnosis.

Ulcerative colitis due to the virus of venereal lymphogranuloma involves the distal portion of the colon and the rectum. The disease attacks the entire wall as well as the mucosa and the lymphatics around the bowel, producing a rather stiff, thickened tube. Multiple small sinuses from the mucosa to the deeper structures may result. Symptoms are minimal and complaints concern mainly, rectal discomfort. The diagnosis is made from the proctoscopic appearance, the history of previous venereal infection and the positive Frei test.

Chronic bacillary infection of the intestinal tract may produce ulcerative lesions. The lesions are regular as to size and shape and are disseminated. While the roentgen findings may be characteristic, the diagnosis depends on positive stool cultures or positive agglutination tests. Specialized technique employed by experienced laboratory personnel is essential in making these stool cultures if reliable results are to be obtained. The agglutination tests may be unreliable because of antigenic variants.

Tuberculous ulcerative colitis, while usually associated with tuberculous disease in the small bowel, may occur as a primary entity. It is usually secondary to tuberculosis of the lungs or tuberculosis in some other part of the body. The ulcers are distributed irregularly and are associated with lesions visible on the serous surfaces of the bowel and with miliary tubercles. The disease progresses from the ileum downward and involves most frequently the proximal portion of the colon. Seldom are the lesions visible through the proctoscope, and one must rely on the roentgen evidence to make the diagnosis.

While it is not generally accepted that intestinal allergy is a primary factor in the development of true ulcerative colitis, Rowe[14] believes that chronic ulcerative colitis may be caused by severe allergic reactivity in the colonic mucosa similar to that responsible for atopic dermatitis. Ulceration, fibrosis, scar tissue formation and bowel perforation may arise from superimposed secondary infections from various bowel bacteria. Bargen is of the opinion that intestinal allergy should be considered as a condition quite apart from ulcerative colitis. He states that it may play a part in many ulcerative intestinal inflammations, but that it is not necessarily causative in any of them.

The proper medical management depends on classifying the various types of ulcerative colitis from the standpoint of etiology and on a careful differential diagnosis. While it is doubtful that any medical regime can bring about a permanent cure of this disease, much can be done to promote a remission or an arrest of the active disease. If organic changes, such as fibrosis and scarring, have occurred, these are as a rule permanent and irreversible, and surgical treatment may be indicated. However, under these conditions, medical management may produce improvement in bowel function and in the general health of the patient as the active phase of the disease is arrested.

Medical management might well be divided into (1) general supportive measures and symptomatic relief, and (2) the use of specific measures best suited to the individual case. In the idiopathic or streptococcic type of ulcerative colitis, rest plays an important part. In mild cases rest in bed may not be necessary. However, in the more severe cases total body rest is indicated. Increasing recognition of the role played by mental and emotional stress as the precipitating or aggravating factor merits our attention.[6,7,9] Due consideration should be given to this factor and attempts should be made to eliminate it as far as possible. Oftentimes psychiatric approach and treatment may be necessary. In many instances, assurance and the use of simple sedation will be sufficient.

Likewise, rest for the colon in the form of relieving intestinal peristalsis should be secured; this can best be obtained by the selection of a proper low-residue diet, the use of adsorptive powders, such as bismuth and kaolin, the use of antispasmodics and, at times, opium and its derivatives.

Dietary considerations are important both from the standpoint of preventing irritation in the lower bowel as well as that of correcting malnutrition. The diet should be high in calories, proteins and vitamins and low in residue. The amount and type of food will depend upon the patient's ability to tolerate it. It may be necessary to begin with small feedings, increasing the food intake cautiously until an optimum amount can be taken. Supplemental vitamin administration is indicated in nearly all cases. In the more severe and fulminating cases, if malnutrition and hypoproteinemia are present, whole blood, plasma and intravenous amino acids are indicated. When allergic manifestations or deficiency states are present, special consideration must be given to these factors.

As anemia is almost invariably present and in many instances may be severe, this must receive careful attention. The more severe anemias must be treated by blood transfusions, using a series of small transfusions rather than a few of larger amounts. Iron should be given in minimal amounts and administered with caution because of the irritating effect often produced on the intestines.

Chemotherapy in ulcerative colitis has shown varying results. Many optimistic reports on its use have been noted, especially in the acute and septic phases, but often it has proven of little or no demonstrable value. While there does not appear to be any specific effect upon the primary cause of the disease, there is undoubtedly considerable value in the control and prevention of secondary bacterial invasion. Various drugs of the sulfonamide series, such as azosulfamide (neoprontosil), succinlysulfathiazole (sulfasuxidine), sulfaguanidine, sulfathaladine, nisulfadine and nisulfazole have been used with varying success. Azosulfamide and succinlysulfathiazole have received the most favorable mention.[2] In the acute septic cases a more absorbable form, such as sulfadiazine, may be indicated. Average amounts may range from 50 to 100 grains daily, given in divided doses. Careful consideration must be given to the reaction of the individual patient and the administration governed accordingly.

Penicillin and streptomycin have shown promise in certain cases, especially when used in the acute cases.[11,12,15] However, they have not been given adequate trial to fully evaluate them. It seems probable that their effect will be similar to that of the sulfonamides. Bargen has long been an advocate of the use of antistreptococcus vaccine and feels that it is of distinct value in prolonging remissions and in preventing recurrences. Fever therapy produced by the intravenous administration of typhoid vaccine has been used in the chronic form with results comparable to those obtained with other forms of medical therapy.[16]

Recently A. Morton Gill[8] of London has reported on the use of a preparation extracted from the mucosa of the small intestines of pigs. While the results were encouraging, further study is necessary to evaluate this form of therapy.

There has been considerable difference of opinion as to the use of surgical measures in nonspecific or streptococcic ulcerative colitis. Bargen believes that this form of therapy should be reserved for complications and for use in certain patients who do not react favorably to a careful medical regime. In his experience the mortality, especially in the acute severe cases, has been lower under medical management than where surgery has been employed. Kiefer and Jordan and associates believe that well directed and aggressive surgical measures will save many lives, especially in the acute septic cases, and that it will also rehabilitate chronic colitis invalids. They state that total colectomy can be called the only actual cure of ulcerative colitis now available.

Ileostomy, which is employed to place the colon at rest, seems indicated in acute febrile cases as an emergency measure where medical management has failed, in impending perforation and in instances of gross hemorrhage. The mortality in these cases will be high, especially if it is done as a last resort. If the procedure is carried out early before the patient's resistance has become too low, the mortality is reduced.[10] In the chronic cases where recurrences are frequent and severe and where complications are developing, ileostomy should be considered. It is seldom that an ileostomy is of a temporary nature and must be considered as a permanent measure or as preliminary to complete colectomy. Partial or complete colectomy will in certain instances restore chronic invalids to a useful existence. Considered judgment and surgical skill are necessary to obtain a low mortality.

In regional ulcerative colitis, medical management of the type described above may bring about remissions and apparent cure. However, it is largely confined to the problem of rehabilitation for future surgical treatment. Because of the high incidence of recurrence and the unpredictable manner in which this disease behaves, radical surgical excision is the treatment of choice. This should only be carried out after a careful and proper rehabilitation of the patient and the reduction of infection to a minimum.

In amebic ulcerative colitis, a combination of general supportive measures and the administration of suitable preparation of ipecac, arsenic and iodine will usually control or cure the disease. Continued observation of the patient with examination of the stools is necessary in order to ascertain whether the treatment has been effective. The drugs usually used are emetine hydrochloride, carbarsone, diodoquin and chiniofon.

In the chronic bacillary type of colitis, the sulfonamide preparations, particularly sulfadiazine, succinylsulfathiazole and sulfaguanidine, have given very satisfactory results. In the acute stages sulfadiazine alone or in conjunction with succinylsulfathiazole or sulfaguanidine should be used. In the more severe chronic cases sulfaguanidine given in large doses has been most effective.

In ulcerative colitis due to the virus of venereal lymphogranuloma, chemotherapy, especially the sulfonamide compounds, has proven of the greatest value. Here again succinylsulfathiazole and sulfaguanidine appear to be the most useful because of their lack of toxicity and because of the minimal systemic absorption.

In tuberculous ulcerative colitis, the newer forms of chemotherapy, especially streptomycin and some of the newer sulfonamide compounds, undoubtedly will prove of great value in the management of this disease. This must be supplemented with adequate care in a sanatorium with all of the known therapeutic measures usually used in the treatment of tuberculosis.

Summary

1. Ulcerative colitis is a disease of known and unknown etiologies characterized by specific changes in the colon and influenced by various infectious, toxic, allergic, nutritional and neurogenic factors.

2. Classification according to etiology is necessary to properly understand and treat this disease.

3. Medical management is dependent on a careful differential diagnosis and the proper application of known effective theraputic measures.

4. Surgical measures complementing medical management are indicated in severe, intractable cases and in the presence of complications.

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MEDICAL TREATMENT OF PEPTIC ULCER

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IN considering the medical treatment of peptic ulcer, the treatment of the patient and his problems, conflicts and habits is fully as important as the treatment directed at the ulcer. Bockus[1] has emphasized that the mental conflicts and anxieties common to all of us contribute to the development, chronicity, and recurrences of peptic ulcer. Business or financial worries, marital incompatibility and domestic unhappiness are common factors.

We all know how the stresses of this last war caused a tremendous increase in the incidence of ulcer. One authentic striking example occurred in the crew of an American submarine which was submerged and under heavy depth charging by a Japanese destroyer squadron for forty-eight hours. When that submarine finally limped into port, 40 per cent of the crew had developed severe gastrointestinal syndromes and 14 per cent of the crew were found to have definite peptic ulcers.

Many a patient first notices ulcer symptoms after vainly trying to perform the duties of a job for which he is not suited or qualified. The treatment of those patients includes an effort by the physician or psychiatrist to help remove the nervous tension or conflict. Where domestic unhappiness exists, the patient should be removed from that environment to a hospital for the first part of his treatment. A talk with the patient's employer may straighten out the worry about his job. Getting the patient to take a much needed vacation or to go off on fishing or hunting trips or to develop a hobby are all means of helping the nervous background for ulcer. Encouraging the patient to develop regular hours of eating and sleeping and to eat slowly are all important parts of treatment. Excessive use of alcohol and tobacco must be stopped, and there is no doubt that complete abstinence from both agents is essential in the majority of patients. In this country we rarely see deficiencies of diet or of vitamins playing a role in ulcer development or recurrence.

In treatment directed toward the peptic ulcer itself, what are some of the factors required to produce healing?

1. The motor and secretory activity or work of the stomach must be reduced. Physical inactivity of the patient reduces his appetite and subsequent hunger contractions. A bland diet without stimulating meats or irritating foods reduces the chemical and hormonal phase of gastric secretion. Vagus depressants and central nervous system sedatives help also to modify motor and secretory activity.

2. Bed rest, preferably in a hospital, for the first three weeks of an ulcer management undoubtedly helps all ulcer patients to make a good start on healing the ulcer and in educating them to their medical regime. Hospitalization is absolutely essential in patients with intractable pain, or with bleeding, obstruction or symptoms suggesting early penetration or possible perforation of the ulcer. Actually, however, I find that in office practice, especially now when hospital beds are extremely difficult to obtain without a considerable delay, that probably not more than 10 to 15 per cent of ulcer patients urgently need to be hospitalized. A satisfactory ambulatory medical regime can be very effective in the majority of uncomplicated duodenal ulcers or small gastric ulcers of the lesser curvature.

3. Diet is of great importance in the healing of an ulcer. It should consist of frequent small feedings of milk and cream, or other bland feedings, avoiding regular sized meals at first in order to avoid gastric distention with its increased secretion of acid gastric juice. The addition of cream to the milk adds calories and inhibits the secretion of acid, as well as tending to hold the mixture in the stomach long enough to allow neutralization to take place. I usually have the patient take 3 ounces of two-thirds milk and one-third cream each hour between meals, carrying a thermos bottle to work with him if he is on an ambulatory regime. No milk or food is to be used after 7:00 P.M. in order to cut down the continued secretion of acid gastric juice after bedtime. In an uncomplicated ulcer, on an ambulatory schedule, I allow three bland meals, in addition to milk and cream, insisting that the evening meal be the smallest of the three in volume, again in an effort to reduce continued secretion through the night, and thus to

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reduce night pain. I believe it is bad practice to allow milk at bedtime. Chicken, fish or tender lamb or beef may be allowed at the noon meal, but not in the evening. In hospitalized patients, where there is a suspicion or definite evidence of obstruction, one must, of course, be much slower to add regular meals or to increase the bulk of food intake until obstruction due to spasm and edema has been relieved or until it has been established that there is an organic obstruction. In rare instances, where an ulcer patient is allergic to milk, one can often use evaporated milk, junket, milk with lime water added, powdered skim milk, or protein hydrolysates. Goats' milk or soy bean milk at times can be helpful. If none of these are helpful, one must then depend on a two-hourly schedule of feedings with cooked cereal, egg, gelatin, soups with flour thickening, et cetera.

4. There is much divergence of opinion as to the need for antacids in the management of the uncomplicated ulcer, yet almost all recognized authorities use some form of antacid in ulcers complicated by severe pain, obstruction or hemorrhage. Many writers feel that hourly feedings of milk without antacids are as effective in producing symptomatic relief and ulcer healing as the Sippy method of complete neutralization. Hollander[6] found that peptic activity ceases at a pH of 4.5 to 5; yet complete neutralization requires an elevation of pH to 7. He felt that the acid-peptic factor is the important one in ulcer genesis and healing—not just free acid alone. However, it is this speaker's experience that pain, especially night pain, will disappear sooner, and healing will begin more rapidly, and that bleeding will stop more promptly, if an antacid is used on an hourly schedule throughout the day (halfway between milk feedings) and at half-hourly intervals after 7:00 P.M. (when all milk is stopped) until bedtime. In hospitalized patients, if night pain is persistent, the stomach is emptied at 9:30 P.M. and antacid is given at hourly intervals until midnight and at two-hour intervals throughout the night for the first few nights until the pain disappears. The antacid used has been a colloidal suspension of aluminum hydroxide alone or with magnesium trisilicate added. Tests of patient's gastric contents at various times of the day have shown that free acid is very low or absent when 3 ounces of milk and cream are used on the hour and 2 teaspoonfuls of colloidal aluminum hydroxide are taken on the half hour. On an ambulatory regime I allow patients to use tablets of aluminum hydroxide, which can be easily taken at work. Milk of magnesia may be required once or twice daily to prevent constipation. Soluble alkalies are now rarely justified because of the danger of alkalosis, which is not found with aluminum hydroxide or aluminum phosphate. Occasionally aluminum hydroxide has been found to combine with a large mass of blood clots to cause bowel obstruction during a hemorrhage, though this is, fortunately, very rare. I have never observed such a complication.

5. Tincture of belladonna or atropine given at four- to six-hour intervals will be of considerable help in relieving intractable pain and reducing spastic obstruction to emptying of the stomach. In the latter cases, atropine should be given by hypodermic. In ambulatory patients, tincture of belladonna, with sodium bromide or phenobarbital or pavatrine tablets containing phenobarbital are very helpful in the ulcer management. Atropine, belladonna and pavatrine, whereas not as effective as vagus resection, at least do put a strong brake on vagus action. The bromide or phenobarbital helps to slow down and relax the tense, driving individual with whom we usually have to deal. In the early stages of an ulcer diet, especially when milk and cream alone may be used, vitamins B and C are advisable. Ferrous sulphate should be added if the hemoglobin is low, for an ulcer diet is poor in iron.

There are various procedures which may be of considerable aid in the medical treatment of peptic ulcer. Gastric aspirations at bedtime, probably by means of an Ewald tube, are of great help in determining the presence of clinical gastric retention. If such evening aspirations done at 9:30 P.M. with no milk or water intake after 7:00 P.M. yield much more than 200 c.c. of gastric contents night after night for two weeks, with no gradual decrease in the amount aspirated, one may be quite sure he is dealing with organic pyloric obstruction and the patient should be referred for operation. However, if the evening aspirated gastric contents increase gradually under treatment from 800 to 1,000 c.c. down to less than 200 c.c., one may be sure the retention has been due to spasm and edema at or near the pylorus. Continuous aspiration of the night secretion of the stomach through a nasal tube may be helpful in questionable cases. Sandweiss et al[10] have shown that after a well-balanced meal, taken at 6:00 P.M., an average amount of 446 c.c. of gastric juice was obtained on continuous suction from 12:00 midnight to 7:00 A.M. in normal persons and in uncomplicated duodenal ulcer cases. In ulcers, accompanied by pyloric obstruction, the amount is much greater. Jejunal feedings, by means of a nasal tube which has been passed through the pylorus into the small bowel, may rarely be needed to reduce pyloroduodenal motility in cases of intractable pain. The gastric acidity can be controlled by continuous suction through another tube introduced into the stomach, or by using small hourly oral doses of aluminum hydroxide. Continuous nasal drip of alkalinized milk or of aluminum hydroxide has been recommended especially for bleeding ulcers. This has the advantage of continuous protection of the ulcer from acid but is irritating to the patient and thus may cause more harm than good, as a result of vagus effects on the stomach.

In the past twenty years innumerable other agents and regimes have been suggested and tried and usually found ineffective or inferior to the acid neutralization method. Gastric mucin was discarded because it had little neutralizing power for acid and was difficult to administer. Innumerable substances for parenteral injection have been introduced including aolan B. prodigiosus, lipoproteins with emetine, and many vaccines. It has been shown that almost any form of protein shock may ameliorate the symptoms of ulcer but have no effect on the healing of the ulcer. Histidine injections have had wide usage and popularity in many quarters. The writer, in 1938-39, studied a series of eighteen duodenal and gastric ulcer patients who were given full courses of injections of histidine (Larostidin). Many of the patients reported considerable relief of pain but in not one patient were the x-ray findings of an active ulcer (with crater) improved at the end of the course of treatment. Bockus[1] states: "I know of no scientific basis for the use of histidine parenterally in ulcer therapy." He also found no clinical justification for its use in these cases. Deep x-ray has also been used in ulcer therapy but has dangerous side effects and its only value would seem to be in intractable duodenal ulcer and some cases of jejunal ulcer, where the temporary achlorhydria has been helpful.

Two other newer adjuncts in the treatment of peptic ulcer may be briefly described. Greengard, Atkinson, Grossman and Ivy[4] have reported that parenterally administered enterogastrone, a highly purified mucosal extract of the first few feet of the small bowel of the hog, has an inhibitory effect on gastric secretion. It has protected Mann-Williamson dogs from death or ulcer recurrence, often for one to five years after cessation of ulcer management and the authors have now confirmed the beneficial effect on fifty-eight human ulcer patients. The material is effective only on parenteral injection and was administered three to six times weekly for a year. This method as yet is still in the experimental phase, and it is unlikely that enterogastrone will ever become a widely used adjunct in the treatment of peptic ulcer, though it may find limited use.

The second newer adjunct in ulcer treatment is the use of protein hydrolysates. Reports by Co Tui et al[2] in 1945, and by Kimble[7] and Hodges[5] in 1947 have pointed out the value of protein hydrolysates obtained from milk or beef in supplying a concentrated easily assimilable food for frequent-feeding schedules which correct the protein deficiency which has been found to exist in the blood of many ulcer patients. Solutions of these protolysates can be given intravenously, by continuous intragastric drip, or by hourly or two-hourly feedings (alone or alternating with a standard milk-cream feeding. The use of amino acids in the treatment of ulcers was first suggested by Levy and Siler.[8] Co Tui found ulcer craters disappeared (by x-ray) in from ten to thirty days. Recurrences of the ulcer promptly occurred if no further dietary regime was followed. Kimble found the average serum proteins before nine days of treatment was 5.3 gms. per cent and increased after treatment to 6.2 grams per cent. In nine of fifteen cases, x-ray evidence of ulcer disappeared after an average of nine days of treatment. These patients were then placed on a partial ambulatory ulcer regime at the end of this protolysate treatment. Hodges, in a series of twenty-six patients, selected largely patients who had had no benefit from, or had had a recurrence of ulcer symptoms while on "adequate" conventional dietary therapy. The average patient received 285 gms. of protein and 2,900 calories daily. This regime proved more effective in producing ulcer remissions than was conventional treatment but the frequency of relapses after treatment (two to three weeks) was not decreased. The present writer has had experience with this method, using Parenamine and glucose intravenously without oral feedings or using a mixture of Essenamine (a protolysate), glucose, sodium chloride and water in hourly oral feedings. Both methods have the same advantages over conventional ulcer treatment but are much more expensive to the patient and necessitate careful observation in a hospital. As Hodges reports, protein hydrolysates may be a useful adjunct in the medical treatment of peptic ulcer, but as now used are no panacea.

How long is it necessary to continue a medical regime for peptic ulcer in order to insure healing of the ulcer? The criteria usually used for healing of an ulcer are disappearance of the duodenal or gastric ulcer crater and loss of irritability or spasm of the duodenal cap. Using these criteria Cummins, Grossman and Ivy[3] found the average "healing time" in sixty-three duodenal ulcers to be thirty-seven days (range thirteen to sixty-eight days) and in six gastric ulcers to be forty-two days (range eighteen to sixty-eight days). Several gastroscopic studies have shown gastric ulcer to heal in three to six weeks in some cases and in over twelve weeks in others. Gastroscopic check on x-ray studies has often found re-epithelization soon after disappearance of the niche. In other cases, a shallow crater still remained after the niche had disappeared. Recently, Pollard, Bachrach and Block[9] have reported on the rate of healing of a series of 100 gastric ulcers (judged by disappearance of the crater on x-ray). Thirty-eight benign gastric lesions failed to heal under hospital treatment in an average stay of twenty-three days; thirty-three patients were left in the hospital until a negative x-ray was obtained. This required an average of twenty-five days (range of ten to fifty days). The authors found that, in general, the ulcers which did not heal had a higher acidity than had the "healed" group. I am strongly of the opinion that x-ray evidence of healing of an ulcer, especially a duodenal ulcer, is not adequate evidence of clinical healing, and my ulcer patients are advised to follow a full ambulatory management for a minimum of four to six months, depending on the location of the ulcer and its chronicity. Partial neutralization is carried out for several months more. Surveys made in the past of several thousand ulcer patients treated by the Sippy method have revealed that the highest percentage of ulcer recurrences followed cessation of a strict medical regime in one or two months, and those who remained on it for six months up to a year had a very low percentage of ulcer recurrences. The factors which are most prone to produce an ulcer recurrence are too early discarding of the careful medical ulcer regime; periods of anxiety, mental conflict or nervous tension; heavy smoking; and more than occasional use of alcohol.

The space allotted for this paper will not allow more than bare mention of the medical treatment of the complications of peptic ulcer. Perforation and its sequellae, penetration, organic pyloric obstruction, all require surgical treatment. The medical treatment of obstruction preliminary to surgical procedures includes correction of the dehydration, hypochloremia, alkalosis and hyperazotemia, as well as building up the blood proteins by intravenous amino-acid or protolysate administration. Keeping the stomach empty or from overdistention, by means of morning and evening aspirations or at times by constant nasal suction, is very important. The presence of or recent history of hematemesis or melena is not an indication for operation unless bleeding cannot be checked by a medical regime. Usually a second episode of bleeding, while under medical management, is an indication for prompt surgical treatment if the patient is in the arteriosclerotic age group. In younger patients a medical regime, particularly complete acid neutralization day and night by means of aluminum hydroxide (in addition to protolysate or merely milk and cream feedings hourly throughout the day) has promptly stopped the hemorrhage and yielded stools free of occult blood within seven to ten days. Liver function tests should be done if hepatic cirrhosis is suspected of being the cause of the bleeding when a patient is first seen. Carcinoma is responsible for not over 5 per cent of all massive gastric hemorrhages. Bockus[1] states that a patient with upper gastrointestinal hemorrhage who is not in shock should not be treated for shock and that unnecessary blood transfusions may be disastrous. This is very true but such patients can go into shock quickly at times so they must be very carefully watched by very frequent pulse and blood pressure readings. Hypodermoclysis or a slow intravenous drip of glucose in saline or of protolysate may be all that is needed to restore the blood volume gradually. Massive hemorrhage, of course, requires blood plasma or repeated blood transfusions. The mortality in massive hemorrhage has been given as not over 10 per cent—probably no greater than the average operative mortality when surgical intervention is attempted in the case of hemorrhage.

The medical management in these cases should include careful neutralization of acid through the night hours—otherwise it differs little from that of nonbleeding ulcers. The Meulengracht diet has never seemed rational to this speaker since it use defeats the entire principle of acid neutralization and motor rest for the stomach.

Carcinomatous ulcer of the stomach becomes at once a surgical problem. It has been my practice to treat medically any gastric ulcer of the upper two-thirds of the lesser curvature which on x-ray and gastroscopy appears probably benign and where free acid is present in the gastric contents. The ulcer is observed by both methods at two-week intervals until the lesion has completly disappeared. Stools are watched for occult blood. If the progress of healing ceases at any time, surgical consultation is requested. It is felt that the number of carcinomas whose prompt diagnosis is delayed by this method is no greater than the number of surgical fatalities among benign lesions unnecessarily operated upon.

In conclusion it is emphasized that the medical treatment of peptic ulcer must primarily treat the patients, his habits, and the factors in his nervous make-up and in his domestic and economic environment which have contributed to development of his ulcer. In treatment directed at the ulcer itself, the motor and secretory work of the stomach must be reduced and the gastric acidity must be largely, if not completely, neutralized by hourly feedings and non-absorbable antacids. The importance of controlling the night secretions of acid is stressed, especially in bleeding ulcer cases. Protein hydrolysates have been briefly discussed and are found valuable especially in ulcers complicated by non-organic obstruction or by hemorrhage.

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VAGOTOMY IN PEPTIC ULCER

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BECAUSE of space and time limitations, we shall be able to present only an outline of the results of our studies on vagus nerve resection for duodenal, gastric and gastrojejunal ulcer.

Recently[4] we presented our studies of the anatomic variations in the vagus nerves of human beings from a point well above the diaphragm to the stomach. It suffices to say that in 92 per cent of cases, the nerves, in the vicinity of the diaphragm, consisted of two main trunks which could be isolated and resected as well below as above the diaphragm. In 8 per cent of cases the nerves were multiple and variable in their positions so that it probably would have been difficult to dissect all the branches regardless of the surgical approach made to them. On previous occasions we also reported in detail the early results of vagus nerve resection for gastroduodenal and jejunal ulceration, first in a group of sixty-six cases[5] and later in a group of eighty-three cases[3] which included the original sixty-six cases.

It is interesting to note in our cases, as well as in those reported by Dragstedt, that in at least 8 per cent of cases, results of the insulin test made subsequent to the operation indicated that all the branches had not been divided.

Emphasis hardly needs be placed on the fact that if one is to evaluate scientifically the results of vagus nerve resection, it is necessary to present proof, other than that obtained by visual inspection or palpation of the esophagus, that all the nerves have been resected. It would seem that the Hollander insulin test, the mode of action of which has been previously reported elsewhere,[2] is an essential part of the study of the patients if one is to be sure that a complete surgical procedure has been carried out, and the tissue removed must be examined microscopically to determine whether it is nervous tissue. It is likewise very important that one ascertain by inspection, palpation and, if advisable, by biopsy that a peptic ulcer exists, that it is not malignant and that there are or are not other associated intra-adbominal lesions.

One of our patients who gave a good history for ulcer and positive roentgenologic evidence of duodenal ulcer presented no evidence of ulcer when the duodenum and the lower part of the stomach were opened. He obtained complete relief of symptoms after pyloroplasty. Another patient had an associated Meckel's diverticulum and a diseased appendix. In the fifty cases in which the senior author performed vagus nerve resections, it was thought necessary and advisable to do additional intra-abdominal operations, other than on the stomach, simultaneously in seven cases.*

Moreover, it is necessary, in studying the results of vagus nerve resections done by various surgeons, to be sure to determine what percentage of the total number of patients with proved duodenal ulcer underwent the operation. In the series of 170 cases in which Dragstedt performed the operation, 86 per cent were done on patients with duodenal ulcer, 9 per cent on patients with gastrojejunal ulcer and 5 per cent on patients with gastric ulcer. In the Mayo Clinic series in which the operation was performed, 65 per cent of the patients had duodenal ulcer, 29 per cent had gastrojejunal ulcer and 6 per cent had gastric ulcer.

The results reported by Grimson, Moore and Colp closely parallel those which we have reported from the clinic.

In 1928 approximately 40 per cent of the patients with duodenal ulcer who came to the Mayo Clinic were operated on. Many of these patients had a small duodenal ulcer for which the operation of pyloroplasty or gastroduodenostomy gave satisfactory results. In 1946, 13.7 per cent of the patients with duodenal ulcer were operated on. Most of these patients had a large, chronic, perforating or obstructing duodenal ulcer; they were the types of patients on whom both medical men and surgeons were convinced that surgical procedures, probably partial gastrectomy, were indi-

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*Of the seven patients two had associated cholecystectomy and four had associated appendectomy. One additional patient had a mesenteric mass removed which microscopically proved to be fat necrosis.

cated. It is because of the large size of these ulcers and the danger of occurrence of serious gastric retention as a result of the gastric atony that follows this operation that vagus nerve resection alone without other operations on the stomach was performed in but seventeen of the fifty cases in the senior author's cases (Series 1). In Series 2 (patients operated on by our colleagues) vagotomy was performed but thirty-one times without other gastric operations in their sixty-eight cases.

If vagotomy is combined with a drainage operation on the stomach, whether gastroenterostomy or partial gastrectomy, it is quite apparent that it is difficult to determine just how much of the result obtained is attributable to vagotomy, gastroenterostomy or partial gastrectomy. It will require the passage of time to determine whether patients who have had vagotomy and gastroenterostomy will have anastomotic ulcers. Although it has been stated that complete division of the vagus nerves causes an immediate cessation of the pain of ulcer, three of our patients who gave negative reactions to the insulin test which indicated complete vagus nerve resection, either had continuation or recurrence of distress from ulcer. The presence of a recurring ulcer was demonstrated roentgenographically in two of these cases and pathologically in the third case when partial gastrectomy was performed for a large recurring, perforating gastric ulcer.

The most troublesome sequelae of the operation have been disturbances in gastrointestinal motility. These occurred in the immediate postoperative period in 40 per cent of our cases; in follow-up studies they were found to be present in 12 per cent of the cases nine months after operation. These symptoms consist of a distressing feeling of fullness, nausea, belching of foul-smelling gas, and abdominal distention. Some patients had vomiting and diarrhea. The use of urethane of β-methylcholine chloride (urecholine) in the treatment of these disturbances of motility has been too recent to permit formation of a definite opinion as to the value of this drug. That it does promote gastric peristalsis can be demonstrated in some cases by roentgenologic examination. Two recent patients, however, obtained no clinical benefit from administration of the drug, and gastric retention remained unchanged. Both of the patients had considerable retention for approximately two and a half weeks after removal, four and a half days postoperatively, of the indwelling tube in the stomach.

The atony of the stomach which results from complete vagus nerve resection and which is responsible for retention of food and gastric secretion within the stomach is, we believe, the main reason for the relief of pain from ulcer which these patients experience. In several such cases roentgenologic examination before the patient's departure from the clinic revealed the ulcer still to be active. Necropsy carried out in one of our colleagues' cases, in which death occurred on the fourteenth day after vagotomy and gastroenterostomy, revealed an unsuspected perforated duodenal ulcer with a subdiaphragmatic abscess. Weeks has reported a similar unsuspected perforation of duodenal ulcer following vagotomy.

The favorable results of the operation seem to be in the cases of recurring ulceration after partial gastrectomy and in cases of gastrojejunal ulcer. The senior author has performed the operation in a group of seven patients who had such recurring ulcers. In one of these it was thought advisable to do a resection of the stomach in addition to vagotomy because the large jejunal ulcer had its base on the transverse colon and there was impending perforation into the latter. Rather than take a chance that the vagotomy might be incomplete or that the ulcer might not heal, it was thought advisable to remove the ulcer and an additional amount of the stomach. In four cases of gastrojejunal ulcer, the gastroenteric stoma was removed and the gastrojejunal ulcer excised because of the fear that with healing of the ulcer, if healing did occur, the gastroenteric stoma would be occluded, as did occur in one of Dragstedt's cases in which Cole performed partial gastrectomy to relieve the obstruction. Two additional cases included one gastroduodenal ulcer and one gastrojejunal ulcer, each of which followed a Finsterer type of gastric resection (allowing the pylorus to remain). In these two cases only vagotomy was done. With the procedures which have been outlined the immediate results of the operation have been very satisfactory.*

In our Series 1, insulin tests were made in thirty-nine of fifty cases. Failure to carry out the tests in the other eleven cases occurred for the most part during the months of May, June and

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*Since this paper was presented, one of the patients has returned because of weight loss and loss of appetite. He has no pain but a roentgenogram of his stomach ten months after operation shows a recurring duodenal ulcer with a crater.

July, 1946, when we were feeling our way along in the performance of the procedure and in a study of the results, for there is some risk in a test which requires that the blood sugar be lowered to a value below 40 mg. per 100 c.c., preferably to 30 mg. per 100 c.c. In the past nine months insulin tests have been carried out in thirty-six of thirty-eight cases. A positive reaction to the insulin test occurred in thirteen, or 33 per cent, of the thirty-nine cases, indicating that all the branches of the vagus nerves had not been divided. Interestingly enough, however, all of these patients were relieved of distress from ulcer after operation, and the incidence of achlorhydria and disturbances of motility practically paralleled that observed in the group in which the insulin test gave negative results, indicating that all vagus fibers had been cut. Roentgenologic examinations of the stomach showed atonicity in seven patients, in five of whom clinical evidence of disturbances of motility developed. Gastric acidity was reduced to an achlorhydric level in six of the thirteen patients who gave positive reactions to the insulin test and three additional patients had significant reductions of gastric acidity.

In the fifteen patients who gave definitely negative reactions to the insulin test after the blood sugar was reduced to a level below 40 mg. per 100 c.c., three patients had distress from ulcer postoperatively, two of whom had definite ulceration on roentgenographic examination two and a half months and six months respectively after operation. Likewise approximately a half, or seven of the fifteen patients, gave evidence of achlorhydria. The other five patients had a reduction of gastric acidity.

There is a third group of eleven additional patients who gave a negative reaction to the insulin test and whose blood sugar level did not go below 40 mg. per 100 c.c. during the insulin test; in seven of these, however, the value for blood sugar went well below 50 mg. per 100 c.c. None of this group of eleven patients had postoperative distress from ulcer although four complained of disturbances of motility. Ten patients in this group had postoperative roentgenograms, four of which showed an atonic stomach and one showed a gastric ulcer still present one month postoperatively. Eight of the eleven patients obtained an achlorhydria and another had a reduction of gastric acidity. Still another patient in this group, when studied four months after operation, although free of symptoms of ulcer, had fullness and belching of foul-smelling gas. The roentgenogram showed dilatation of the stomach with a small recurrent gastric ulcer.

The following deductions are evident: (1) Relief of the symptoms of ulcer has not been dependent on the completeness of the division of the vagus nerves, if the Hollander insulin test can be assumed to be an accurate method to determine the completeness of the dissection. (2) Disturbances of motility have occurred almost as frequently in the group of patients who gave a positive reaction to the insulin test as in the group in which a negative reaction to the insulin test was obtained. (3) Reduction of acidity occurred in approximately 69 per cent of the cases in which a negative reaction to the insulin test was obtained and in 93 per cent of the cases in which a positive reaction was obtained; the reduction reached an achlorhydric level in 46 per cent of the cases in the former and in 60 per cent of the cases in the latter.

Space does not permit discussion of the cases in Series 2 (sixty-eight cases) in which vagotomy with and without other operative procedures was carried out by other surgeons at the Mayo Clinic. References have been made to this series in previous papers presented by us and the cases will be reported in detail later by the surgeons themselves.

Summary and Conclusions

On previous occasions we have reported in detail our studies on the variations in the anatomy of the vagus nerves and the early results which have followed the performance of vagus nerve resection for gastroduodenal and jejunal ulceration, first in a group of sixty-six cases and later in a group of eighty-three cases which included the original sixty-six cases.

The results of vagus nerve resection in human beings in the treatment for peptic ulcer are inconstant, variable and, in most cases, unpredictable as regards disturbances of motility. Three of our fifty patients have had distress from ulcer postoperatively; two of these gave evidence of ulceration on roentgenologic examination two and a half months and six months, respectively, after operation. Gastric resection for a large gastric ulcer was later performed on one of these patients. A fourth patient was thought to have an ulcer four months postoperatively although dilatation of the stomach, food remnants and retention of secretion made the examination not entirely satisfactory. In addition, the roentgenogram of a fifth patient made one month after operation showed evidence of a considerable amount of jejunitis. In all these cases all the vagus nerve fibers had been resected, as indicated by the fact that the reaction to the insulin test was negative.

Of patients who gave negative reactions to the insulin tests in Series 2, one who had undergone vagotomy elsewhere several months previously, showed roentgenologic evidence of jejunitis. This patient was found at operation at the clinic to have a large gastrojejunal ulcer that had not healed subsequent to the previous vagotomy. Removal of the gastroenteric stoma, excision of the ulcer-bearing area and resection of the stomach were performed.

In evaluation of the results of the operation of vagus nerve resection, it must be proved that an ulcer was present at operation and that the vagus nerves were completely sectioned. It is our opinion that the best approach in most cases in which vagotomy is contemplated is by means of an abdominal incision, for such an approach allows both examination of the ulcer and exploration of the intra-abdominal structures, especially the gastrointestinal and biliary tracts, and the performance of such procedures as might seem necessary to supplement the vagotomy.

The greatest field of usefulness for vagotomy seems to be in the treatment of recurring ulcers after partial gastrectomy and gastroenterostomy and in certain patients with non-obstructive duodenal ulcers in which the cephalic phase of gastric secretion is marked and pain is intractable. If the operation is used in the treatment of gastrojejunal ulceration which follows gastroenterostomy, the possibility of obstruction at the stoma and at the site of the healed or reactivated duodenal ulcer must be considered. It has no place in the treatment of chronic gastric ulceration for which the results of partial gastrectomy are excellent unless the ulcer cannot be removed with safety, in which event the edges of the ulcer should be excised and the tissue examined for evidence of malignancy. When vagotomy is performed simultaneously with other gastric operations, the relative value of each procedure may be difficult of interpretation unless several years elapse without recurrent ulceration.

In view of the inherent ability of the gastrointestinal tract of human beings, like that of the gastrointestinal tract of animals in the experimental laboratory, to regain through autonomic and compensatory mechanisms its function after operative procedures which disturb neuromuscular continuity, and since restoration of gastric acidity and gastric motility has occurred within a two-year period in dogs in which vagotomy has been performed, the possibility of such a return in human beings must be kept in mind constantly.

The operation of vagus nerve resection continues to be in the investigative stage and the effects of the operation should be carefully studied and should be further evaluated by all those interested in the progress and advancement of surgery.

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TUBERCULOSIS AND THE GENERAL HOSPITAL

Whenever a considerable number of tuberculosis deaths occur in the homes of the community, a serious source of tuberculosis infection exists and undermines other control measures.

The general hospital has an important role in reducing this hazard. By expanding facilities for care of tuberculous patients, particularly for patients during the pre-sanatorium period, the latter institution will be able to utilize its facilities for all patients needing long term care, or palliative treatment. The general hospital can provide the diagnostic service and short term care required by the large number of persons in whom case-finding programs discover minimal tuberculosis.—Jacob Yerushalmy, M.D., *Hospitals,* August, 1946.

LUMBAR RETROPERITONEAL GANGLIONEUROMA

Review of Literature and Report of Case

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GANGLIONEUROMATA, whatever their location, are rare tumors, but they seem to occur especially infrequently in the abdominal retroperitoneal area. These tumors have been reported in the central nervous system, cranial nerves, nerve roots, ganglions, neck, thorax, mesentery, appendix, pelvis, suprarenal glands, intestine, cervix, ovary, uterus and knee. They no doubt occur with much greater frequency than reported cases would indicate, the reason being that they usually do not produce symptoms until a vital structure is encroached upon. They rarely become malignant, they practically never metastasize, and consequently many are not noted until found at autopsy.

The first description of a ganglioneuroma was given by Loretz in 1870, but the first one noted in the lumbosacral retroperitoneal area was described by Chiari in 1898 and a year later a similar case was reported by Cripps and Williamson. Up to 1931 when McFarland reviewed the literature only thirteen such cases had been reported, and in a similar review through 1943 Clayton found only seventeen cases. However, practically all of these were presacral or precoccygeal in origin and only about eight cases of those actually in the lumbar area could be found in the literature. Because of the war it has been impossible to obtain copies of isolated case reports in many foreign languages, such as Russian, Japanese, Czechoslovakian and so forth, so it is not known just how many such cases are in the literature. As a matter of fact, Reynolds and Cantor stated there were probably fewer than fifty up to November, 1946. Perusal of the files of the Pathology Department, University of Minnesota, both those from operative and autopsy records, fails to reveal a single case of a retroperitoneal ganglioneuroma. Also, in a review which the author made with Dr. Judd in 1934 of all retroperitoneal tumors at the Mayo Clinic, of which there were forty-six, not a single case of this type was found. There was one ganglioneuroma, but its origin was the suprarenal gland and not the lumbar sympathetics.

These tumors occur more frequently in the thorax where they have been found in the posterior mediastinum and chest wall. Several descriptions of these have emphasized the fact that they may be of the "dumb-bell" or "collar button" type, in which extension of the tumor through the intervertebral spaces to the other side occurs. In this type, complete removal is difficult or impossible, and recurrence of the tumor may be expected.

Symptomatically, these tumors all behave more or less similarly. They occur usually in young adults, and due to their slow growth and the fact that they rarely encroach on vital structures, they usually go unnoticed for a long period of time. They seem to occur more frequently in females, although this may be relative more than actual, since pelvic examinations are more frequent in women. Pain and the presence of a mass seems to be the main complaint, although other symptoms occur depending upon structures encroached upon, such as the bowel, kidney, ureter, bladder, and so forth.

The physical signs are mainly those of a moderately soft or firm mass, fixed posteriorly, usually smooth, and located on one side or other of the vertebral column. They are usually painless and have been present for many years without symptoms. They are practically always single, although two case reports of multiple ganglioneuromas have been noted. In their surgical removal most authors comment on the dense adhesions surrounding the tumor; in fact, in several cases the ureter or large arteries and veins, such as the iliac, have been torn, and operative death has ensued.

Differential diagnosis from sarcoma, lipoma, fibroma and so forth, at the time of operation is usually impossible, and only microscopic section will reveal the true nature of the tumor.

Pathologically these tumors usually are more or less encapsulated, they are firm and somewhat elastic, and vary in size up to 12 inches in diam-

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Presented before the Minneapolis Surgical Society, March 6, 1947.

eter. On section, the capsule retracts and the incised edges become everted, while the appearance of the interior is usually pale yellowish or pink, with many connective tissue septa dividing the substance into lobules.

Microscopically there are nerve and connective tissue elements. Bundles of nerve fibers in longitudinal and transverse sections are surrounded by a connective tissue stroma. Mature ganglion cells are present singly or in groups, and extending from the cell body, one or more nerve processes may be seen. Their cytoplasm is granular and the nucleus may be single or multiple, and occasionally vacuolar degeneration is present. The stroma may be dense or fine and usually consists of many neurofibrils, along with areas of degeneration.

It is obvious that these tumors are derived from specific nerve tissue, being the result of hyperplasia of ganglia, and consisting of medullary and non-medullary nerve fibers and of ganglion cells. Reynolds and Cantor have described the method of development of this tumor. Their description indicates the fact that in the migration of the ganglionic crests during embryonic life, certain cells become displaced or miscarried. The sympathetic ganglionic organization, as is well known, is the result of migration of individual cells from the neural crest substance down to the dorsal nerve roots and peripheral trunks to form paired ganglionic clusters. These migrating cells may never reach the ganglionic mass, and no doubt most frequently never give rise to any difficulty. However, they may begin to proliferate at any time along the line, and the type of tumor that is formed by these cells depends on the level of differentiation that has been attained. The ganglioneuroma represents the tumor formation from the mature cells, or from the neurocyte that has reached the end stage of its development. They therefore are undoubtedly congenital in origin.

With complete removal of these tumors, often difficult, the prognosis is usually good, although recurrences have been noted. Evans and Francona have recorded rare instances of metastases, but these must be exceedingly uncommon. Roentgen therapy, as one would expect from the nature of this tumor, is of no value.

Case Report

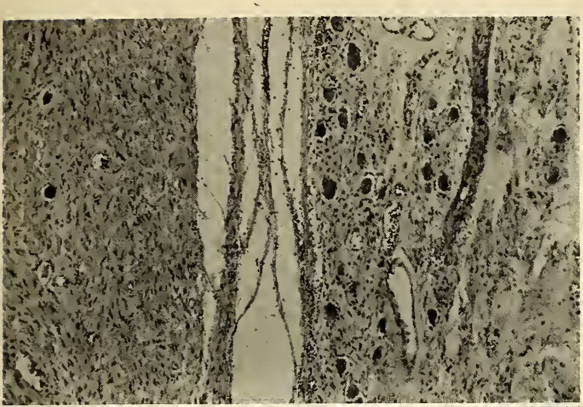
The patient is a white woman, twenty-eight years of age. Her past history is essentially irrelevant except for that recorded. Whether many of the details pertain to this case is problematical, but due to the bizarre nature of many of the symptoms, it was considered best to record them as they occurred in the progress of the case.

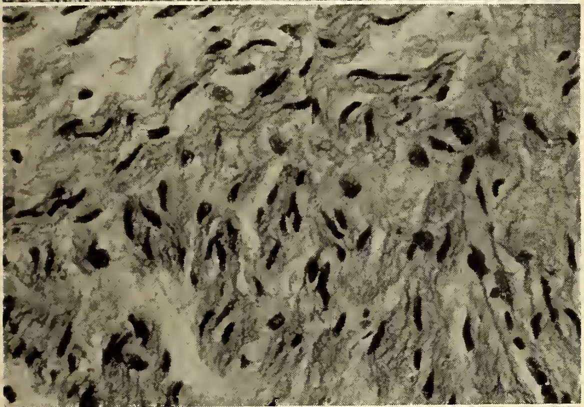
The patient started early in childhood with an indefinite pain in her right lower abdomen and lower back, severe enough that she avoided stepping on her right foot. In fact, her mother was constantly scolding her because she continually wore out her left shoe long before the right. These pains at first were intermittent but soon became so frequent as to keep her in bed for several days at a time. In 1933, at the age of eighteen, she was examined completely at a large clinic because of these pains, and an orthopedic consultant advised that her symptoms were due to a mild scoliosis which she had had for many years. Other causes of this pain were excluded, especially appendicitis or pelvic disorders. Treatment of the scoliosis by exercises resulted in considerable improvement in her symptoms, but she still was confined occasionally to bed because of the pain. She found that when she was the most active, such as when she was playing baseball, swimming or dancing, she felt better. Periods of inactivity always made the pain more severe. She stated that the better condition in which she kept her muscles through athletics, the more infrequent and the less severe her symptoms were.

She was married in 1938 and in 1940 the left tube was removed for ectopic pregnancy. At this time appendectomy was also done. Convalescence was normal but no change in her backache resulted, and she continued to have the same right-sided pain. This was uninfluenced through four normal pregnancies.

The pains continued to recur in this same fashion until August, 1946, when she for the first time developed severe constant pain in the left lower abdomen. This was most pronounced in changing from a standing to a sitting position. It radiated through to the lower left lumbar area of the back but was not associated with genito-urinary symptoms and there was no nausea or vomiting. As long as she lay quiet, the pain was present but not severe.

Physical Examination.—Her appearance was not that of an acutely ill individual. Her temperature was 98.6° F., pulse rate 74 per minute, blood pressure 100 systolic and 64 diastolic in millimeters of mercury. The head, neck and chest were normal. The abdomen was normal except for the following: There was a low midline scar, solidly healed. The patient located the pain in an area to the left of the midline and just below the umbilicus, and on palpation of this area a firm fixed smooth mass could be made out measuring about 6 cm. wide and 12 cm. in length. It lay alongside the vertebral column at the level of the third and fourth lumbar vertebrae and on pressure, pain was produced locally radiating through to the back. Movements of the spine in this area also produced similar distress. Vaginal examination gave essentially negative results and the tumor could not be reached through the pelvis. The reflexes, both superficial and deep, were all





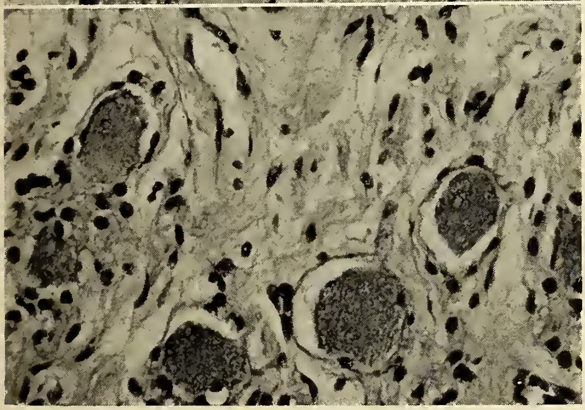


Fig. 1. (*above*) Low power view of section of tumor. The left half shows mainly connective tissue stroma while that on right presents many ganglion cells and nerve processes.

Fig. 2. (*center*) High power view of connective tissue and nerve process elements.

Fig. 3. (*below*) High power view of ganglion cells with nerve processes.

normal and equal. The remainder of the examination was essentially negative.

Laboratory Data.—The value for hemoglobin was 15.2 grams per 100 c.c.; white cells 4,600 per cubic millimeter, with 51 per cent neutrophiles, 38 per cent lymphocytes, 5 per cent monocytes and 6 per cent eosinophiles. Urinalysis gave negative results. The blood Wassermann reaction was negative. Roentgenographic examination of the dorsal, lumbar and sacral spine gave negative results. The outline of the kidneys was normal, and apparently there was no connection between them and the mass.

A diagnosis of a tumor of uncertain nature and most likely retroperitoneal in origin was made, and exploration was done on August 6, 1946. At this time the tumor was found to lie alongside the left vertebral margin, measuring about 12 by 6 cm., being smooth and oval in shape, and firmly attached posteriorly to the vertebrae. The overlying peritoneum was incised and reflected medially and the tumor removed in one mass. Considerable difficulty was encountered in its removal due to its vascularity and its firm and dense adherence to the surrounding structures, especially posteriorly to the vertebral column. The ureter was isolated and retracted so that no damage could be done to it. The tumor was completely removed, a Penrose drain was inserted in the cavity and peritoneolization was completed. Her immediate postoperative condition was good and her convalescence was normal except for the condition to be described.

Pathological Data.—The tumor removed measured 10 by 4 cm. It was fairly well encapsulated, rounded, smooth and of pale grayish color, firm in consistency and with a nerve structure apparently passing through its substance. On microscopic section the picture was that of a fibromatous mass with many scattered sympathetic ganglion cells. The portion of tumor resembling a nerve was a sympathetic ganglion structure (Figs. 1, 2, and 3).

Immediately postoperatively, as soon as the patient became conscious, she complained of abnormal warmth of the left leg as compared to the right, and on examination this was found to be the case. The temperature of the left leg from then on, and to the present, has been constantly one or two degrees above that of the right. After further discussion of this symptom with the patient, she stated that she had always had abnormally cold feet, and she noticed that for the first time the left one was of normal temperature.

Up to the present, ten months postoperatively, she has had no recurrence of the pain of which she has complained for many years. Whether this tumor was the cause of her right-sided pain is a matter of conjecture. At any rate, she has remained completely free of this distress, so that one must feel that the ganglioneuroma must have had some bearing on this symptom. The left leg has continued to remain warmer, by one or two degrees, than the right leg in spite of changes in the environment. It is obvious that with the removal of this tumor the sympathetic chain has been partially removed on this side, and the equivalent of sympathectomy has been done, such as that done for the relief of high blood pressure. No changes in her blood pressure have occurred, probably because it was not elevated preoperatively and also because only one extremity was involved.

Summary

A case of retroperitoneal ganglioneuroma of the left lumbar sympathetic system is reported in

(Continued on Page 977)

MINNESOTA SEROLOGICAL EVALUATION STUDY

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A REPORT of the first evaluation study of serological tests for syphilis as performed in Minnesota was made in 1941.[2] A brief review of the national evaluation studies since 1934, as well as the organization of the Minnesota study, was included. A second report, covering the evaluations as conducted in 1941 and 1942, was made in 1943.[1] The plan and arrangements for conducting the evaluation studies in the state since that time, i.e., 1943 to 1946, inclusive, have been changed somewhat, but retain the original purpose, namely, to supply specimens and compile the findings, so that the methods of performing serological tests in the state may be evaluated.

As can be seen from Table I, the number of laboratories participating increased considerably during the first three years. The number remained almost constant from 1943 to 1946 in spite of the huge problems of equipment and personnel encountered during that time. There was also an increase in the number of laboratories that use three or four procedures per specimen. These laboratories generally are in larger institutions and reflect the trend of using multiple tests, including a complement-fixation test, in solving the diagnostic problems of patients with doubtful or slightly positive serological reactions but no historical or clinical findings to explain those reactions.

The number of serological techniques used by the participating laboratories in the state has decreased from twelve in 1941 to nine in 1946, while at the same time there was an increase in the number of laboratories using the tests recommended by the United States Public Health Service on the basis of author-evaluation studies.[3] Table II gives the number of participating laboratories using the various techniques.

TABLE I. NUMBER OF TECHNIQUES USED BY PARTICIPATING LABORATORIES

	1941	1942	1943	1944	1945	1946
One	17	27	28	29	27	27
Two	11	14	12	10	9	9
Three	2	1	3	3	4	5
Four	1	2	1	1	3	2
Total No. of labs	31	44	44	43	43	43

TABLE II. TECHNIQUES IN USE AND NUMBER OF LABORATORIES USING EACH

	1941	1942	1943	1944	1945	1946
Kline-diagnostic†*	18	29	27	26	30	32
Standard Kahn†*	9	14	13	13	14	12
Rytz	5	3	3	5	6	4
Kline-exclusion†*	2	3	5	6	5	6
Kolmer-Wassermann†*	3	3	4	3	5	5
Hinton†*	2	3	3	2	2	2
Laughlin	2	3	3	2	0	0
Other complement fixation tests	4	3	2	2	1	1
Mazzini*	0	2	2	2	3	5
Eagle†*	1	1	2	1	1	1
Leiboff	1	2	1	0	0	0
Ide	1	0	0	0	0	0
Meinicke	1	0	0	0	0	0
Total No. of techniques	12	11	11	10	9	9

†Techniques used by Minnesota Department of Health; Eagle discontinued in 1946.
*Techniques recommended by U. S. Public Health Service.

The State Department of Health laboratories have participated in the national evaluation of serological tests for syphilis since 1936. In these evaluation, 125 to 160 specimens from nonsyphilitic persons and 190 to 235 specimens from syphilitic patients are tested. The results are evaluated on the basis of percentage sensitivity and percentage specificity. The formula for calculating sensitivity is:

$$\frac{\text{Positive results } + \tfrac{1}{2} \text{ doubtful results}}{\text{Syphilitic specimens}} = \text{percentage sensitivity}$$

The formula for calculating specificity is:

$$\frac{\text{Negative results } + \tfrac{1}{2} \text{ doubtful results}}{\text{Nonsyphilitic specimens}} = \text{percentage specificity}$$

Criteria of satisfactory performance are that participating laboratories must have a sensitivity rating of not more than 10 per cent below the author serologist, and a specificity of not less than 99 per cent.

Table III shows the sensitivity and specificity ratings of the Minnesota Department of Health laboratories in the national evaluations. The specificity of the Kline exclusion, used as a screen test only, is usually slightly below suggested

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Original members of the State Serologic Committee were: N. H. Lufkin, M.D., Francis W. Lynch, M.D., Paul A. O'Leary, M.D., Arthur H. Sanford, M.D., Lucy Heathman, Ph.D., M.D., (ex officio), R. R. Sullivan, M.D., (ex officio).

Margaret W. Higgenbotham, D.Sc., Anne Kimball, Ph.D., and Henry Bauer, M.S., Minnesota Department of Health, Division of Preventable Diseases, assisted in these studies.

TABLE III. PERFORMANCE OF MINNESOTA DEPARTMENT OF HEALTH AND AUTHOR-LABORATORIES IN NATIONAL EVALUATION STUDIES

		1941		1942		1943*		1944		1945		1946	
Test		MDH	Author	MDH	Author	MDH	Author	MDH	Author	MDH	Author	MDH	Author
Kline—exclusion	Specificity	**98.8**	100.0	**97.6**	100.0	**97.8**	100.0	**97.2**	**97.8**	99.7	100.0	**97.8**	100.0
	Sensitivity	86.9	86.0	91.9	88.5	88.9	84.4	87.6	88.4	84.5	82.5	90.1	87.3
Kline—diagnostic	Specificity	99.2	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.3	100.0
	Sensitivity	78.0	76.0	86.0	83.1	75.3	65.6	79.3	82.2	76.2	76.5	82.7	81.8
Kolmer—Wassermann	Specificity	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.4	99.3	**98.6**	100.0	100.0
	Sensitivity	83.9	77.6	86.8	84.9	**69.8**	82.0	76.8	85.5	77.7	78.3	**75.0**	88.4
Standard Kahn	Specificity	100.0	100.0	100.0	100.0			100.0	100.0	100.0	100.0	100.0	100.0
	Sensitivity	75.8	79.2	75.7	80.0			73.9	82.1	69.8	77.7	80.1	83.1
Hinton*	Specificity					99.6	100.0						
	Sensitivity					81.3	84.7						

*Hinton tests substituted for Kahn in 1943. Samples are sufficient for only the four tests.
Bold figures indicate ratings below standard.

TABLE IV. TECHNIQUES PERFORMED BY MINNESOTA DEPARTMENT OF HEALTH*

Classified as Satisfactory or Unsatisfactory as to Sensitivity and/or Specificity.

	1941		1942		1943		1944		1945		1946	
	A†	B††	A	B	A	B	A	B	A	B	A	B
Sensitivity and specificity satisfactory	8	14	12	21	9	21	14	19	14	18	18	27
Specificity only satisfactory	5	5	4	5	0	1	4	5	6	7	4	5
Sensitivity only satisfactory	14	8	26	17	31	19	26	20	30	26	29	20
Unsatisfactory sensitivity and specificity	9	9	7	6	4	3	2	2	4	3	4	3
Too few specimens reported	0	0	4	4	10	10	5	5	3	3	2	2
Total No. of performances	36		53		54		51		57		57	

*Kline (diagnostic and exclusion), Kahn, Kolmer-Wass. and Hinton, also Eagle except in 1946.
†A. Using 99% or above for satisfactory specificity.
††B. Using 97% or above for satisfactory specificity.

TABLE V. TECHNIQUES NOT PERFORMED BY M.D.H.*, ** CLASSIFIED AS

Satisfactory or Unsatisfactory as to Sensitivity and/or Specificity.

	1941		1942		1943		1944		1945		1946	
	A†	B††	A	B	A	B	A	B	A	B	A	B
Sensitivity and specificity satisfactory	1	4	4	6	2	2	2	4	1	3	2	3
Specificity only satisfactory	2	2	1	1	1	3	2	2	1	3	1	1
Sensitivity only satisfactory	7	4	5	3	2	2	4	2	5	3	2	2
Unsatisfactory sensitivity and specificity	2	2	0	0	4	2	2	2	3	1	2	1
Too few specimens reported	1	1	3	3	2	2	1	1	0	0	4	4
Total No. of performances	13		13		11		11		10		11	

†A. Using 99% or above for satisfactory specificity.
††B. Using 97% or above for satisfactory specificity.
*See Table II.
**Complement fixation tests compared with M.D.H. Kolmer-Wassermann results; precipitation tests compared with M.D.H. Kline-diagnostic results.

standards. The specificity of all the other tests evaluated was well above the suggested minimum. The sensitivity ratings of each technique have been satisfactory every year except for the Kolmer-Wassermann in 1943 and 1946.

For comparative purposes, in the state evaluation studies, the various procedures as carried out by the Department of Health laboratories may be considered control performances such as those of the author-laboratories in the national evaluations. Tables IV and V summarize the number of procedures showing satisfactory performance, according to the suggested criteria, for the years 1941 to 1946, inclusive. Table IV shows comparisons for the techniques routinely in use at the state laboratories, namely, Kline-exclusion-Kline-diagnostic, Standard Kahn, Kolmer-Wassermann, Eagle, and Hinton. In Table V the performance of other techniques, i.e., Mazzini, Rytz, et cetera, are compared to the S.B.H. Kline-diagnostic. Admittedly, this record does not give a true comparison of performance, but for economic reasons, it was impossible to conduct all techniques in the state laboratories.

TABLE VI. PERFORMANCE OF KLINE-DIAGNOSTIC TEST ONLY

	1941		1942		1943		1944		1945		1946	
	A†	B††	A	B	A	B	A	B	A	B	A	B
Sensitivity and specificity satisfactory	1	4	5	11	4	10	4	9	4	6	7	12
Specificity only satisfactory	2	2	0	1	0	0	1	2	2	2	2	3
Sensitivity only satisfactory	9	6	16	10	18	12	17	12	21	19	20	15
Unsatisfactory sensitivity and specificity	6	6	6	5	3	3	3	2	2	2	3	2
Too few specimens reported	0	0	2	2	2	2	1	1	1	1	0	0
Total No. of labs	18		29		27		26		30		32	

†A. Using 99% or above for satisfactory specificity.
††B. Using 97% or above for satisfactory specificity.

TABLE VII. PERFORMANCE OF STANDARD KAHN TEST

	1941		1942		1943		1944		1945		1946	
	A†	B††	A	B	A	B	A	B	A	B	A	B
Sensitivity and specificity satisfactory	6	7	4	5	3	5	3	3	5	6	4	6
Specificity only satisfactory	1	1	4	4	0	1	3	3	2	2	1	1
Sensitivity only satisfactory	1	0	4	3	5	2	4	4	6	5	5	3
Unsatisfactory sensitivity and specificity	1	1	0	0	0	0	0	0	0	0	0	0
Too few specimens reported	0	0	2	2	5	5	3	3	1	1	2	2
Total No. of labs	9		14		13		13		14		12	

†A. Using 99% or above for satisfactory specificity.
††B. Using 97% or above for satisfactory specificity.

It is noted in Tables IV and V that the larger number of techniques have satisfactory sensitivity ratings only, and are low in specificity performance. Because a relatively small number (100 or fewer) of nonsyphilitic sera were tested by each technique, one false positive or two false doubtful reactions would reduce the specificity below the required 99 per cent. Therefore, in the second column under each year in the tables, the numbers of techniques showing satisfactory performance under a slightly reduced specificity rating (97 per cent) are tabulated. It is readily seen that the number of procedures meeting the amended criteria of satisfactory performance in sensitivity and specificity is thus increased.

In Table VI are listed the performance ratings of the Kline-diagnostic procedures as carried out in the participating laboratories. This procedure in general shows good sensitivity performance, but seems to be poor in specificity, i.e., only nine of thirty-two meeting the satisfactory specificity criterion of 99 per cent in 1946. As will be seen, there has been some improvement in the specificity performance of the Kline-diagnostic procedures in the 1946 study.

It is shown in Table VII that the Standard Kahn procedures gave relatively good ratings in the state evaluations, but that the percentage of satisfactory performances in regard to specificity as well as sensitivity has decreased somewhat in 1946.

In general, the performance of serological tests for syphilis has shown improvement in the state as reflected by the evaluation studies recorded, and it is hoped that this improvement may be extended and increased.

We wish to thank the pathologists and technicians of the participating laboratories for their interest and cooperation in these studies. The facilities of the Minnesota Department of Health are available to any laboratory in the state wishing to use them. We also wish to thank Miss Jennie Schey of the Department of Dermatology, University of Minnesota Hospitals, for assistance in arranging for the donors.

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ROENTGEN THERAPY OF BRONCHIOGENIC CARCINOMA

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IN the treatment of bronchiogenic carcinoma the radiologist's lot is not a happy one. His patients are usually feeble men who are in or past the sixth decade of life, and the malignant lesion has progressed beyond the stage of operability, either through their own fault in not seeking medical attention earlier or because, for various reasons, the diagnosis was not made in an early stage of the disease.

For these patients, "cure" is out of the question. Since the hopelessness of their situation might have been prevented by diagnosis at a time when pneumonectomy might have offered a good chance of complete cure, it may be well to review some of the warning signs of bronchiogenic carcinoma. The data have been drawn mostly from a recent paper by Moersch and Tinney.

Perhaps the reason why an early diagnosis of bronchiogenic carcinoma is seldom made is because of the failure to think of carcinoma.

Cough, which is the most frequent symptom, occurred in 81 per cent of the 448 cases reported by Moersch and Tinney; however, because many patients who suffer from other diseases complain of this symptom, its importance often is misinterpreted. As the tumor increases in size, obstruction to drainage of the bronchus occurs, the retained secretions become infected, and the cough becomes more productive and purulent. Chills and fever ensue, and such an episode is often mistaken for pneumonia. In this regard, a carefully taken antecedent history is very important in all cases of pneumonia, lest the diagnosis of bronchiogenic carcinoma be missed.

In about half of the 448 cases the patients had expectorated blood. Because hemoptysis often had been associated with cough and fever, an erroneous diagnosis of tuberculosis had been made in some of the cases. In this connection, it is only fair to state that the differential diagnosis of bronchiogenic carcinoma often is very difficult.

The degree of dyspnea may be out of proportion to the size of the lesion and to the amount of atelectasis which it produces. Usually, dyspnea develops gradually, but occasionally it develops suddenly and, when it is associated with wheezing respiration, it may be mistaken for asthma. Dyspnea may be due to pleural effusion, which results from invasion of the pleura by carcinoma cells. A pleural effusion was present in 15 per cent of the 448 cases.

Pain occurs in about half the cases, and occasionally is the first symptom. Pain indicates that carcinoma has spread to the pleura, to the thoracic cage, or to the mediastinum and neighboring nerves. It usually indicates that the tumor has reached an advanced stage. The intensity of the pain may vary from a mild, easily tolerated discomfort to a constant severe or agonizing pain which requires morphine for relief.

Other symptoms, including hoarseness, loss of weight and clubbing of the fingers, may be encountered. Their presence is not characteristic of bronchiogenic carcinoma but they should arouse suspicion of this lesion.

In the 448 cases reported by Moersch and Tinney, the average duration of symptoms from their onset until the diagnosis was made was eight and a half months. For this delay in diagnosis they gave three important reasons: (1) the lack of specificity of the symptoms; (2) failure to suspect the presence of carcinoma of the bronchus, and (3) difficulty in making a positive diagnosis even when the presence of bronchiogenic carcinoma is suspected.

Although the roentgenologic and physical signs of bronchiogenic carcinoma are very important, they will not be considered in detail in this paper. In 73 per cent of the cases reported by Moersch and Tinney, the roentgenologic findings caused the roentgenologist to suspect the presence of bronchiogenic carcinoma.

The early diagnosis of bronchiogenic carcinoma is most easily and most accurately made by bronchoscopy. This procedure was used in 399 of the 448 cases reported by Moersch and Tinney, and the results of biopsy were positive in 368 (92 per cent) of the cases. However, attention should be called to the fact that when the results of bronchoscopic examination are negative, or when a pathologist reports that tissue removed is not malignant, this does not eliminate the possibility of bronchiogenic carcinoma.

From the Section on Therapeutic Radiology, Mayo Clinic, Rochester, Minnesota.

Read at the meeting of the Buffalo Radiological Society, Buffalo, New York, February 4, 1946.

Another reason why the prognosis is bad in cases of bronchiogenic carcinoma in which the patients are referred to the radiologist for treatment is that about 80 per cent of the lesions are of the highest grade of malignancy, and more than half of them are squamous cell epitheliomas.

I have omitted from this consideration both the so-called Pancoast tumor and "adenoma" of the bronchi, because both of these neoplasms usually are considered to be special lesions which are different from a bronchiogenic carcinoma.

In 1940, Moersch and I reported the results of a review of 250 cases of bronchiogenic carcinoma. Of the 125 patients who did not receive roentgen therapy, none lived more than a year after the diagnosis was made. Follow-up data were available in 315 (70 per cent) of the 448 cases reported by Moersch and Tinney. In the 315 cases, the average duration of life after the diagnosis was made was six months. The authors did not state the type of treatment that was employed in these cases. They said that the prognosis in cases of adenocarcinoma was the same as it was in cases of squamous cell epithelioma, regardless of the grade of malignancy.

It is very seldom that a young, vigorous patient who has bronchiogenic carcinoma is referred to the roentgenologist for treatment. When such a patient is referred to the roentgenologist, he usually has refused to undergo an operation. As I have already said, most patients who have bronchiogenic carcinoma are debilitated and dyspneic, have a chronic cough and often have fever; their physical condition is so poor that only mild, or palliative, roentgen therapy can be employed. Regardless of all other contraindications to intensive treatment, a danger sign on which I place particular emphasis is fever. I regard fever as especially dangerous when it is accompanied by bleeding.

From what has been said about the physical condition of the patients, it is self-evident that large doses of roentgen rays rarely are administered, particularly by the administration of protracted fractional doses. Nevertheless, at the Mayo Clinic, we have administered doses of 3,000 r or more per field in a carefully selected group of cases in which the physical condition of the patients was comparatively good. In these cases, the roentgen rays were administered through four thoracic fields. The beam of rays was directed so as to cross-fire the lesion. The roentgen rays were generated at 200 kilovolts and a filter equivalent to 2 mm. of copper was used. A target skin distance of 50 cm. was used routinely. The results obtained by this technique have given little cause for enthusiasm. Not only were the results no better than those which we have obtained by the method usually employed but the patients did not tolerate this kind of treatment well. The protracted fractional method of treatment may not have been suitable for the patients; the technical details of the method may have been faulty, or we have been unduly impressed by the reactions we have seen. Whatever the reason for the unsatisfactory results, I have abandoned, for the time being, all doses greater than 1,500 r per field, and I now prefer other doses and techniques which I think are safer.

I realize, of course, that the term "safe dose" is inaccurate, ambiguous, indefinite and no more capable of precise estimation than are the doses of many medicaments in clinical use. It perhaps is easier to state what the dose is not than to state what it is. A safe dose of roentgen rays may be regarded as one that will not produce a permanent or a severe temporary reaction. The time required for the course of roentgen therapy should not be so long that it will prove a hardship for the patient, and the cost of the treatment should not be excessive.

In the cases of bronchiogenic carcinoma which I have observed, I have found that it is safer to employ two courses of relatively mild doses of roentgen rays than it is to employ one course of relatively strong doses. It seems very important to distinguish roentgen therapy that is curative from roentgen therapy that is at best palliative. The dose of roentgen rays should depend on the age of the patient, the physical condition of the patient and the stage of development of the malignant lesion. At present, radiologists do not know nearly as much about the radiosensitivity of adenocarcinomas and squamous cell epitheliomas of the bronchi as they do about the radiosensitivity of similar tumors in other parts of the body. In cases of bronchiogenic carcinoma, the role of the tumor bed is, so far as I know, quite unknown.

In the cases of bronchiogenic carcinoma which I have observed, any thought of cure is senseless. The most that can be obtained is palliation of an indefinite degree. In outlining the type of treatment to be employed in such cases, the most important consideration is to determine the smallest doses of roentgen rays that will be efficacious.

As a rule, provided there is no contraindication, most patients receive treatment through four fields, which are laid out so that the beam will cross-fire the bronchial lesion. Each field generally receives a dose of 500 r. The roentgen rays are generated at 200 kilovolts and are filtered through 0.75 mm. of copper. This treatment is usually given in four days. When the patient is in much better than average physical condition, the total dose may be increased to 1,000 r for each of the four fields, the treatment being protracted for sixteen days. This technique, it should be emphasized, is used in cases in which the physical condition of the patients is exceptionally good.

In cases in which cachexia or fever is present, less intensive treatment is employed. In such cases, a dose of 250 to 500 r, depending on the clinical findings in the individual case, may be administered through an anterior and a posterior field. If the physical condition of the patient is very poor, or if there is any suspicion that the lesion may be a lymphoblastoma instead of a bronchiogenic carcinoma, the roentgen rays are generated at 130 kilovolts.

Since palliative results are the best that can be expected in most cases, the selection of the method of treatment in a given case requires precise clinical judgment. In the average case, it seems more sensible to err on the side of undertreatment. In this connection it has been my experience[1] that the results obtained by simple cross-firing of the bronchial lesion with moderate doses of roentgen rays have been as worth while as those obtained by the more radical methods. My own results have not been at all proportional to the magnitude of the dose employed. Nevertheless, roentgen therapy, if judiciously administered, is an excellent method of palliation. I think that any patient whose physical condition is not precarious should receive at least one course of roentgen therapy; otherwise, his life expectancy is at most a year. After the completion of roentgen therapy the radiologist sees an outstanding result just often enough to rekindle the dying fire of enthusiasm. Possibly, the radiologist's lot would be a less unhappy one if he treated more favorable lesions or if some refinement of treatment could assure a happier outlook to the patient with bronchiogenic carcinoma.

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LUMBAR RETROPERITONEAL GANGLIONEUROMA

(Continued from Page 971)

a twenty-eight-year-old white woman. This tumor had produced definite severe pain locally on the left side and possibly on the right side of the abdomen and lower extremity. Complete relief of these symptoms followed its surgical removal. An interesting postoperative sequelae of permanent increase in temperature of the lower extremity on the same side is noted, similar to that occurring with sympathectomy for hypertention.

A review of the literature has been made, and a description of the symptoms, findings and pathologic nature of this tumor are recorded.

Clinically and grossly these tumors are indistinguishable from neuroma, fibroma, sarcoma and so forth, and it is only by microscopic examination that the true nature of the tumor can be made out. They are no doubt congenital in origin and probably arise from cell nests displaced in embryonic life. They rarely recur when completely removed and practically never metastasize.

The rarity of this lesion is indicated by the fact that there are probably less than fifty similar cases recorded in the literature and there are no similar tumors recorded in the files of the Department of Pathology, University of Minnesota.

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CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE STUDY

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Duluth, Minnesota

Dr. A. H. Wells: A good tough diagnostic problem always has its teaching points when the answers are known.

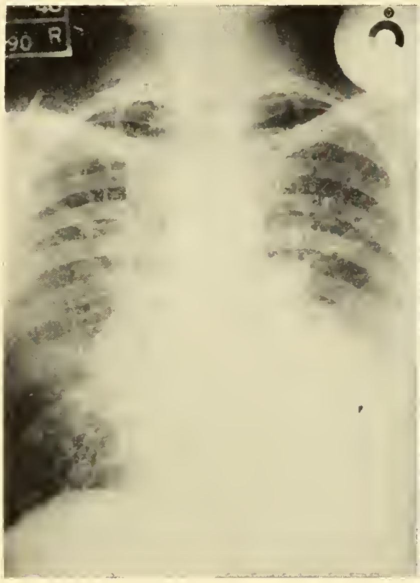

Fig. 1. Anterior-posterior roentgenogram of thorax.

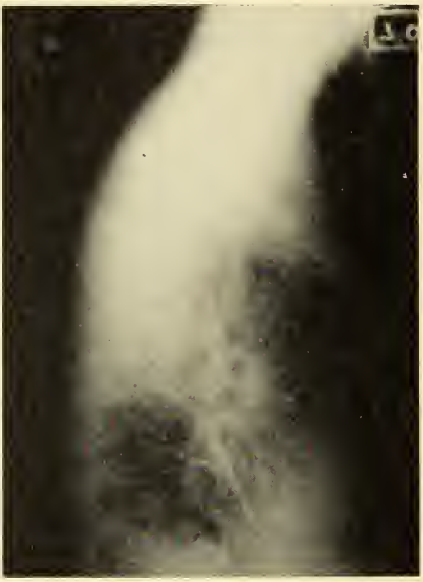

Fig. 2. Lateral roentgenogram of thorax.

Dr. B. J. Terrell: A forty-year-old white miner and lumberjack (Nopeming Sanatorium No. 20990) was first admitted to the hospital on November 18, 1946, complaining of a cough. Two months before admission while working in a sawmill he caught a "cold." At this time he became somewhat short of breath and thereafter orthopneic. This condition did not appear to be progressive, but it was continuous. The symptoms were noticed mostly at night and there was a moderate amount of frothy sputum and some pain in the left side of the chest. There was also some wheezing, but no night sweats, noticeable fever, ankle edema, weight loss or abdominal pain. His appetite was fairly good and his bowel movements were normal. One sister had died of tuberculosis in 1914. The father died of a stroke and the mother died from cancer of the stomach. The patient's induction radiograph at Fort Snelling revealed "healed primary complex" in the right lung. He had been an underground miner for eight years, prior to 1931.

His physical examination revealed dullness in the left base and crackling rales in the lower one third of both lungs. Also, there was a grade II cyanosis. Chest films revealed a diffuse disease process in both lungs (Figs. 1 and 2) and also some cardiac enlargement and mild pleural effusion. His blood pressure was 134/94, temperature 99 degrees and pulse 75. Multiple sputum examinations were negative for acid-fast bacilli. The Wassermann test was negative. His hemoglobin was 15 grams, red blood cell count 5,100,000 and white blood cell count 9,900 with neutrophiles 72 per cent, lymphocytes 22 per cent, monocytes 4 per cent, and eosinophiles 2 per cent. The red blood cell sedimentation rate was 19.5 millimeters per hour (Cutler), and the urinalysis was essentially normal.

He was obviously seriously ill and not a fit subject for drastic diagnostic procedures. Based on the history of familial tuberculosis, a positive Mantoux test, diffuse pulmonary disease in the x-ray picture and a history of underground mining, our tentative diagnosis was that of silicotuberculosis with pulmonary congestion and questionable pleural effusion.

His underground mining experience proved to consist of the repair and maintenance of electric motors and had nothing to do with hard rock mining. This experience we did not feel was compatible with silicosis

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From the Nopeming Sanatorium and Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

and the x-ray picture was not typical of this disease. Further delving into the patient's past history revealed that he was a heavy drinker and that he had been working in a lumber camp cutting "deadheads" that had been removed from lake bottoms several months before. Some of this wood was still wet. His work was close to the saw, and he was exposed to a spray of material from the logs for one month preceding the apparent onset of his illness. Rotten logs are a quick prey to various fungi, and spores liberated while working in this sort of material were long ago reported as a cause of pneumonitis. Again flukes are found in the snails in lakes hereabouts which would lodge in deadheads, and should be kept in mind.

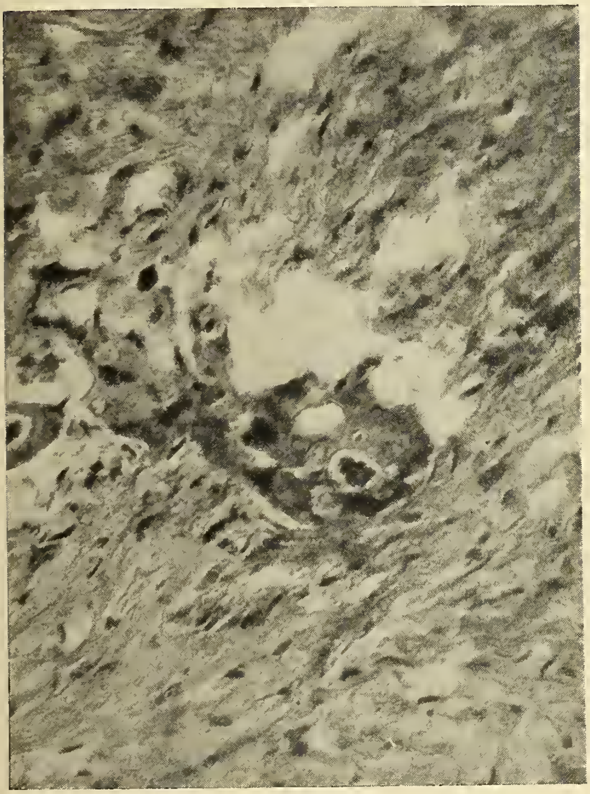

Fig. 3. Photomicrograph of dense fibroblastic reaction about small clumps of highly anaplastic epithelial cells frequently found in lymphatics.

We felt that the outstanding diagnostic possibilities included the following diseases: pulmonary congestion on the basis of myocarditis, valvular disease or pericarditis, Ayerza's disease, bronchopneumonia, metastatic or local infiltrative neoplasms, miliary tuberculosis, rare infiltrates due to yeasts, molds, actinomycosis, blastomycosis, histoplasmosis, et cetera, and interstitial pneumonitis of rheumatic origin.

An extensive search was made for tubercle bacilli, fungi, parasites, et cetera, in the sputum by inoculation of appropriate culture media and an examination of multiple smears with appropriate stains. Skin test was negative for histoplasmosis. His pleural reaction increased and, accordingly, we aspirated fluid from the left thorax three times a week totaling up to 700 c.c. at a sitting. The bloody exudate was examined for neoplastic cells; cultures and smears were made for organisms.

In the meantime, fluoroscopic examination revealed very little cardiac motion and the blood pressure fell from 134/94 to 100/80, leading us to suspect pericardial effusion or adhesive pericarditis despite the lack of dependent edema and the forceful cardiac sound. The cardiac silhouettte was enlarged in all diameters. The conus was not particularly prominent. Electrocardiograms were interpreted as indicating myocardial disease of undetermined type, and there was no evidence of cor pulmonale. The patient's temperature curve revealed a few peaks of one degree above normal during the first week, and from then on it remained normal. His pulse varied from 72 to 95, and the serial red blood cell sedimentation rate read consecutively 16.5, 16.5, 12, 12, and 1.

We felt that his clinical course was pointing away from an infectious process since all of the bacteriological studies failed to reveal etiologic agents, and his temperature and white blood cell count remained normal. This left us with the most likely possibility of either a constrictive pericarditis or neoplastic process. The patient's prostate was normal, and his gastrointestinal tract functioned quite well until five days before his death, when he developed nausea and vomiting of copious quantities of mucoid material which gradually assumed a coffee ground character. There was no obstruction, however, as he continued to have normal appearing bowel movements. In addition, his chest pains became more and more marked; rather more than the effusion would be likely to cause. His dyspnea increased and he sat up all of the time, securing very little rest. He expired on the night of February 8, 1947, almost three months after admission to the sanatorium. Very slight edema was noted on the lower extremities about two days before his death.

Dr. A. H. Wells: The case is now open for diagnosis.

Physicians: Miliary tuberculosis, pulmonary mycosis, carcinomatosis of hidden origin, silicotuberculosis with cor pulmonale and chronic congestive right heart failure, carcinoma of the stomach with pulmonary metastasis.

Autopsy Findings

Dr. A. H. Wells: The postmortem examination revealed four outstanding disease processes or complications. There was a moderately severe diffuse (1) fibrous pancreatitis of long standing with (2) a small (2 cm. in diameter) carcinoma in the slightly enlarged head of the pancreas associated with metastatic carcinoma to the adjacent retroperitoneal lymph nodes about the head of the pancreas and to the lungs and adrenals, (3) cor pulmonale with congestive right heart failure and (4) acute gastric dilatation. The metastatic carcinomatous infiltration of the lungs was particularly interesting in that there was a dense network of fibrous connective tissue throughout all parts of the lungs. These coarse strands of scar tissue could be easily seen on the cut surfaces and the lungs were firm, fibrous and rubbery throughout. Microscopically (Fig. 3), the fibrous trabeculae in the lungs revealed scattered clumps of highly anaplastic gland forming epithelial cells similar to those in the pancreas, located primarily about the margins of the broad areas of fibrous scarring and in lymphatics. The prominent dense scarred areas were obviously originally the site of carcinoma cells which subsequently became atrophic or disappeared due to the density of the connective tissue. These fibrous trabeculae were located primarily along the blood vessels and the disease process is obviously the cause of increased pulmonary tension and resultant cor pulmonale with some evidence of chronic congestive right heart failure in the form of periphereal edema and chronic passive congestion of the liver and spleen.

The huge stomach half filled the abdominal cavity. It weighed 2450 grams and contained approximately 400 c.c. of gas beside the bile-stained mucous containing watery fluid. The walls were relatively thin and there was no organic obstruction at the pyloric valve and no significant dilatation of the duodenum or esophagus.

Cor Pulmonale

For years the generally accepted definition of cor pulmonale (pulmonary heart) has been right ventricular strain due to pulmonary hypertension resulting from pulmonary diseases with either or both clinical and anatomical evidences of this strain on the right heart. More recently a new concept originated by Brill[1] has been widely accepted by cardiologists and internists.[4,6,14,18,22] This new interpretation of the meaning of cor pulmonale includes a host of diseases of the heart, lungs, and great blood vessels causing right heart strain. Theoretically, these lesions are all supposed to cause hypertension in the pulmonary circulation. Therefore, the logic of using the term cor pulmonale is to express their effect on the right side of the heart. With this interpretation, cor pulmonale becomes practically synonymous with right heart strain or pulmonary hypertension. Why not call right heart strain or pulmonary hypertension just that and specify the cause when possible but not distort well-established medical nomenclature and the English language any more than it is. Because of its widespread acceptance, I would like to predict that this new concept of the term cor pulmonale will be a constant handicap in medical intercourse for decades to come.

I would like to call on Dr. J. P. Tetlie for a discussion of cor pulmonale and later Dr. H. M. St. Cyr might briefly summarize the subject of acute gastric dilatation for us.

Dr. J. P. Tetlie: Cor pulmonale has been fairly logically divided into the acute, subacute and chronic types. The acute form[16] is generally due to embolism of the pulmonary arterial tree but may rarely result from pulmonary thrombosis, rupture of an aortic aneurysm into a pulmonary artery, spasm of arterioles due to irritants and allergy, and possibly to a diaphragmatic hernia suddenly compressing the lungs.[15] Animal experimental methods[9] have revealed a critical level of acute obstruction of the pulmonary artery circulation at approximately 60 per cent of its volume flow. Beyond this, serious right heart failure rapidly supervenes.

Subacute cor pulmonale[5] has been considered due in most instances to cancer metastasis to the lungs. This carcinomatous invasion results in obstruction of pulmonary blood flow by cicatricial constriction of small arteries and arterioles because of a diffuse involvement of the adjacent lymphatics (carcinomatous lymphangitis). Carcinomatous endarteritis and numerous small carcinomatous emboli in the small pulmonary arteries[14] may also seriously impede the circulation. The primary site of this cancer is most often in the stomach, but may be in any of the visceral organs. The usual duration of the clinical evidence of cor pulmonale due to cancer is from two weeks to two months. Sickle cell anemia with its vascular obstruction has been included in the subacute group of pulmonary heart diseases.

The chronic form of cor pulmonale is by far the most common variety causing right heart strain. It has been described as having resulted from various lung conditions constricting the pulmonary circulation such as the different causes of emphysema,[21] fibrous scarring and lung tissue destroying lesions as well as pulmonary arteriolar sclerosis. A list of these pulmonary diseases would include: Emphysema, chronic bronchitis, asthma, pneumonectomy, reduction of thoracic volume due to deformities of the chest and spine, thoracoplasty, multiple lung cysts, bronchiectasis, pneumoconiosis, tuberculosis, unresolved bronchopneumonia, fungus and parasitic invasion and Ayerza's disease.

Among the sixty selected cases of cor pulmonale studied at autopsies by Spain and Handler[20] the distribution was as follows: Emphysema—40; bronchiectasis—6; bronchial asthma—6; silicotuberculosis—3; pulmonary tuberculosis—2; kyphoscoliosis—1; pulmonary arteriosclerosis—1; and organized thrombi—1.

Brill and those who agree with his "broader sense" or "physiologic concept" of cor pulmonale would include practically all causes of right heart tension except those diseases which affect the heart as a whole such as beriberi, hyperthyroidism, acute myocarditis, myxedma, anemia and arrhythmias. For instance, his "primary cor pulmonale" includes interventricular or interauricular septal defects and tricuspid, mitral or pulmonary valve stenosis. In fact, any disturbance of the circulation of blood from the vena cavae to the mitral valve which causes any right heart strain regardless of the site of the disease constitutes "primary cor pulmonale." His "secondary cor pulmonale" includes practically all diseases which first cause left heart failure including hypertension, coronary disease, et cetera.

The clinical manifestations of chronic cor pulmonale can be divided into two phases: that due to the pulmonary disease, and that resulting from right heart failure. The general symptoms of the pulmonary phase include dyspnea, cough, hemoptysis, cyanosis, polycytemia, and clubbing of the fingers. Right heart failure is evidenced by engorgement of neck veins, swelling and tenderness of the liver, ascites, peripheral edema, orthopnea, et cetera. These are ominous signs in cor pulmonale and generally appear only a few weeks or months before exodus.

Accentuation of the pulmonic second sound due to a more forceful closure of the leaflets is a most important sign of increased pulmonary tension in adults. Inconstant findings include cyanosis, clubbing of fingers and toes, and the various physical signs of chronic pulmonary diseases usually complicated by cor pulmonale. Roentgenoscopic and roentgenographic studies[17] in all positions frequently reveal characteristic enlargement of the pulmonary artery and the right ventricle before there is any other evidence of right heart strain. The electrocardiogram generally reveals right axis deviation[19] due to hypertrophy of the right ventricular musculature. It is hoped that the new catheterization technique of obtaining blood pressures in the right ventricle might be of great aid in this diagnostic field.

Acute Gastric Dilatation

Dr. H. M. St. Cyr: Acute dilatation of the stomach occurs most frequently following laparotomies and other major surgical procedures or after any type of operation in which general anesthesia is used. It is also found after blows to the abdomen and spine, and also in patients confined to bed with severe wasting diseases such as pulmonary tuberculosis, diabetes, cancer, and chronic heart disease. The condition is frequent enough so that its recognition and therapy must be constantly kept in mind.

There appears to be a fairly general agreement that an initial loss of gastric tonus is followed by an accumulation of secretions and gas, resulting in ballooning of the stomach. Why gastric motility is decreased may not always be apparent. General and spinal anesthesia can depress the stomach musculature.[11] Reflex alteration of the vagus and splanchnic innervation[8,13] may possibly be of fundamental importance. Individual predisposition,[11] aerophagia,[7] duodenal constriction by the superior mesenteric artery,[2] morphine and atropine premedication,[11] debilitation and senility, severity of traumatic injury and the depth of anesthesia may all be important factors in selected cases. Much argument fills the literature concerning the etiology of acute gastric dilatation and it may be some time before the various factors can be properly evaluated as to their importance.

The symptoms are restlessness, epigastric discomfort and the signs of beginning shock. There is eructation and a regurgitation of large amounts of brownish-black fluid. Examination of the abdomen reveals a fullness in the hypochondrium with obliteration of the normal concavity at the costal margin, and there is a succusion splash. Shock and dehydration may be severe. The high blood urea nitrogen, low chlorides and high carbon dioxide combining power are characteristic.

Treatment is aimed at relieving the distention and replacement of the lost fluids and electrolytes. Decompression is best accomplished by a Wangensteen type of nasal suction and frequent lavage of the stomach. Replacement of the lost fluid by intravenous saline and glucose solution is essential. A modified knee-chest position should be encouraged to relieve the pressure of the superior mesenteric artery on the duodenum. Joseph[12] feels that getting the patient to stand up or walk is of great benefit.

At the autopsy, the stomach is found enormously distended with gas and 1500 to 4000 c.c. of fluid. There may be no other pathological change found.

Summary

A difficult diagnostic case study of a forty-year-old underground iron miner and lumberjack is presented. He suffered from a continuous cough productive of frothy sputum associated with dyspnea and orthopnea for five months preceding death. In addition, there was chest pain, pleural effusion, wheezing, familial tuberculosis, positive Mantoux test, crackling rales in the chest, cyanosis and a diffuse x-ray shadow through the lungs. Cyanosis, orthopnea, and edema of the extremities were prominent late manifestations. During the last five days, copious vomiting was severe.

The autopsy revealed a primary carcinoma of the pancreas associated with severe metastatic carcinomatous lymphangitis of the lungs resulting in cor pulmonale with right heart failure. In addition, there was an acute gastric dilatation.

There is a brief discussion of cor pulmonale and acute gastric dilatation.

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from August issue)

Lafayette Redmon, born in Ohio in 1833, a member of the regular school of medicine and one of the earliest of pioneer physicians of Fillmore County, for twenty-six years or more played a prominent part in the social, civic and professional life of Fillmore County, chiefly in Preston Township, and the contiguous communities and, for a time in the middle and late seventies, in Lanesboro, Carrolton Township.

Dr. Redmon arrived in Preston in the fifties, from Indiana, it is believed, and various subsequent references to him which were made editorially in the local newspapers from time to time lead to the conclusion that he was one who had come seeking the much-vaunted salubrious climate of Minnesota. The first appearance of his name observed was in the *Chatfield Republican* of September 19, 1857, in which, as of August 8, Dr. Redmon published a notice as administrator of an estate at Forestville, a village near Preston. Often thereafter, especially in the *Preston Republican*, there were items and notices that have served as an index to his activities. In 1861 it was stated: "We regret to learn that Dr. Redmon who, since his residence here has done much to acquire the good will of the people, is now dangerously ill and we hope for the best, but have some fears. He has suffered considerable hemorrhage of the lungs." In the following summer, however, when steps were being taken "toward celebrating in a manner creditable to the village the coming anniversary of our national Independence," Dr. and Mrs. L. Redmon and Dr. and Mrs. J. W. Crees were in the forefront of making arrangements, and on July 4 Dr. Redmon acted as officer of the day. In that autumn he took over locally for Dr. Luke Miller, of Chatfield, who was surgeon for the county, in the examination of applicants for exemption from military duty. And on October 10, 1862, there appeared an item which, in view of the participation of Mrs. L. Redmon only three months earlier in the celebration of the Fourth of July, is arresting: "Dr. L. Redmon has lately returned from Indiana. He was married in Noblesville in that state to a fair lady and returned not alone. We welcome him back with his help mate. Long life and much happiness to them both." This congratulatory statement was substantiated by a notice of the marriage, on Monday, September 29, at the residence of the bride's father, of Dr. La Fayette Redmon, of Preston, Minnesota, to Miss Mary E. DeMoss, of Noblesville, Indiana. Pioneer residents of Preston have recalled that Dr. Redmon had a daughter, Callie.

On April 29, 1863, Dr. Redmon extended his associations in the community by joining the Masonic Blue Lodge of Preston. About a year later, evidently having just returned after an absence, or an illness, he announced to the citizens of Preston, again through the *Republican,* that he would continue to reside in the village, that he intended to make it his permanent residence, that he was grateful to the people of the village and vicinity and that he trusted that he might be able to deserve a continuance of the same. And this hope he attempted to make good by additional study, for in the spring of 1865 he had returned from "having spent the winter east rehearsing at the Medical Institution." He was then in residence at the Stanwix Hotel (which was established by an early and solid citizen, John Kaercher) and was giving special attention to medicine and surgery.

It was in the period from 1855 to 1867 that promotion of the Southern Minnesota Railroad was at its height and Dr. Redmon was actively participating in the program; in 1867 he was one of a committee of citizens of Preston appointed to investigate the possibility of securing the right of way for the road, which presumably would pass through Preston. The village was disappointed, as were many other settlements; it was not until 1879, as has been told, when Caledonia, Mississippi and Western was extended from Caledonia, that Preston had railway facilities.

That this physician had scientific imagination and forethought was evidenced by his initiative in helping to organize the Fillmore County Medical Society; the organizational meeting was held in his office on October 17, 1866, and there were present besides himself, Drs. R. W. Twitchell and A. H. Trow, of Chatfield; H. Wilson and G. M. Willis, of Carimona; and T. E. Loop of Spring Valley. Other charter members were added soon afterward.

In 1868 Dr. Redmon assumed an additional professional responsibility by serving as Examining United States Pension Surgeon for Fillmore County to succeed Dr. E. J. Kingsbury, of Spring Valley, who had resigned. And in the autumn of 1869, perhaps in consideration of the attempt made that year through the legislature to regulate medical practice in the state, he again left Preston temporarily to take a course of postgraduate study, as did Dr. O. A. Case also. It was because of the departure of these two practitioners that Dr. John A. Ross, a young and well-trained Scotch physician, newly out of Rush Medical College, came to Preston. In January, 1870, Dr. Redmon returned and was re-established, finding his old home more attractive than ever.

It should be said here that early in 1869, at the first semi-annual meeting of the recently reorganized Minnesota State Medical Society, Dr. Redmon had been elected a member of the Board of Censors and he continued on the board into 1870; in 1871 he was a member of the Committee on Obstetrics and Gynecology; he aided the Committee on Surgery, as one of the seventeen physicians in the state to send in reports of cases and statistics for the year ending February, 1871; and in this year, again, in a report to the Committee on Surgery, he observed that goiter was "quite prevalent among Norwegians," of whom there were many in Fillmore County, and expressed the belief that high altitudes were productive of the disease; his treatment for the disorder was giving soft water to drink and administering iodides internally and externally. It should be noted also that this pioneer physician co-operated in due time with the State Board of Health, which was organized in 1872; in 1880 he was one of the eleven physicians, so aften mentioned in this paper, of Fillmore County to respond to an inquiry from the board as to the local incidence of diphtheria in the preceding years.

Apparently Dr. Redmon was one who recognized the value of sound medical publications in the advancement of scientific medicine, for in September, 1870, the *Northwestern Medical and Surgical Journal* published a note of "sincere thanks and gratitude," to Dr. Franklin Staples, of Winona, and Dr. L. Redmon, of Preston, "for having not only sent us many a cheering word, but canvassing successfully in their neighborhoods, sending more than one subscriber and the accompanying needful on which our journal lives." And still another manifestation of his constructive interest in his profession was his encouragement, through preceptorship, of sound preparation for medical practice. In 1869 and 1870 and perhaps into 1871 he took into his office as a student Albert Wentworth Powers, of Fountain, who subsequently studied at Rush Medical College, and it seems a fair assumption that other young aspirants to medicine came under his influence.

Although he had returned to Preston in 1870, by October of 1871 Dr. Redmon was moving and was to be replaced by Dr. A. C. White, lately of Muskegon, Michigan, who had just arrived. Late in November, 1872, however, the following note appeared in the *Preston Republican:*

> RETURNED: After a few months residence in Cedar Rapids, Iowa, where he and his family stood an immense amount of shaking up with fever and ague, Dr. L. Redmon has returned to Preston with his entire household, hoping to regain health and happiness. The doctor says he has tried to find a better place to live in than Fillmore County and failed. He thinks no man can afford to exchange a Minnesota home for one anywhere in any other state in the Union. His old friends welcome him back most heartily.

This was followed early in January, 1873, by two statements: first, that he and his family were improving; second, that he had sufficiently regained his health to be able to enter upon the practice of medicine and surgery with reasonable assurance of being able to attend to all cases promptly at all times. The editor went on to say: "If he has a specialty, it is surgery, in which we know he possesses superior skill. He is a close student and keeps well posted in the science of medicine, an indispensable requisite to success in the healing art. His old friends and patients are glad to welcome him back to Preston." Dr. Redmon then had his offices in the Carpenter Building (still standing in 1944) south of the Court House.

Nevertheless, Dr. Redmon departed yet again, in the early spring of 1874, and in April was building a fine new residence in Lanesboro where, it is believed, he remained for some years. And yet again he returned to Preston. In late December, 1881, he was announcing that he had supplied himself with pure bovine vaccine for vaccinating all who desired permanent protection from smallpox.

His medical contemporaries in Preston were many. In addition to the physicians already named, there were in the village at different periods during Dr. Redmon's long residence the following men, to mention only a few, who are given in chronological order of their coming, from the early sixties into the early eighties; at all times there were more than one physician in the village: J. W. Eighmy, —— Huffman, Lyman Viall, S. Wallace, C. H. Jacobson, Henry Jones and George A. Love.

In May, 1882, well liked though he was both personally and professionally in Preston, Dr. Redmon made his final departure from the village and moved to Winona, Winona County, attracted by the larger field. Regrettably, the story of his later years has not been learned.

If emphasis, perhaps undue, has been placed in these paragraphs on Dr. Redmon's minor removes and changes of residence, it has been done with reason. He was typical, it is believed, of a fairly large group of the earliest physicians in Minnesota, Fillmore County and elsewhere, of better preparation and broader professional viewpoint than the average practitioner of the day, who had come to the state for the benefit of their health in its superior climate. It has been observed in reading of many physicians who were obviously of this group that each of them strove to find the place that would meet his threefold problem of maintaining his health, supporting his family and advancing his profession.

Lewis Reynolds, one of the earliest physicians of Fillmore County, was both practitioner and innkeeper in Granger, Bristol Township. ". . . In 1865 Dr. Lewis Reynolds built the State Line House. . . . Dr. Reynolds was the first resident physician in Granger." Other reference to this pioneer has not been observed.

Hogan J. Ring, born Haaken J. Fjörkenstad and named for his paternal grandfather, was born on February 17, 1851, at the farm home of his parents, Jens Haagensen Fjörkenstad and Helene Fjörkenstad Fjörkenstad (daughter of Johannes Fjörkenstad; the two families were not related), near Lake Mjosen on a large estate, Ringtogen. The boy was the fourth of ten children.

In 1863 Johannes, the eldest of the children, immigrated to the United States and to Minnesota. In the new country he soon found that the family name of Fjörkenstad was too hard for the Americans to pronounce and he therefore cast about for a new surname; at first he tried Jensen, but because, as he said, that name was on practically every corner in the community of Preston, where he had settled, he shortened the name of his birthplace, Ringtogen, and thereafter was known as Johannes (or John) Ring.

These two brothers, Johannes and Haaken, were musicians, playing violins that their father had made and performing ably on other instruments also. Hogan Ring could not remember, his children have quoted him, when he first started to play the violin; he took lessons from his brother until the pupil was playing better than the teacher. In Norway the two boys played for family and guests at home and for dances in their neighborhood. It happened that after Johannes had left Norway, Haaken's playing attracted the attention of Ole Bornemann Bull, the great Norwegian violinist, who would have educated the boy at the University of Stockholm. The stories of American wonders that came home from Johannes were more attractive, however, than the prospect of a musical career under Bull's sponsorship, and in 1865 Haaken, aged fourteen, took passage on the sailing vessel, the Emerald, to Canada and earned his way by playing his violin for dances on shipboard. Arrived in Canada, he traveled by waterways the St. Lawrence River and the Great Lakes, and overland, probably by railway from Chicago, to La Crosse, Wisconsin, and thence to Preston, Fillmore County, Minnesota. Once more the brothers made music together, and the younger by means of his violin earned his way through school. It was in Preston, soon after his arrival, that Haaken J. Fjörkenstad became *Haaken J. Ring* and later, when he became a citizen of the United States, that *Haaken* was changed to *Hogan.* Johannes, never strong, lived only a few years after coming to America.

For several years Hogan Ring in the summer worked on farms near Preston and in the winter went to school in the village. After he had left school, he worked four and a half years as apprentice and clerk in the drugstore of Albert Weiser in Preston until, in 1872, he went into partnership with Mr. Weiser in a new store in Whalan. At about this time a newspaper item, giving an account of the Whalan Cornet Band, stated that "H. J. Ring fingered the 1st B flat." In December, 1873, he was appointed postmaster in the village, in place of G. G. Walker, resigned, and the *Preston Republican* commented, "Hogan is a reliable young businessman and will no doubt make a good postmaster." The village of Whalan, on the Root River and the Southern Minnesota Railroad, was named for John Whaalahan, an early settler; common usage reduced the number of letters in the name. In the days when Hogan Ring first lived in Whalan, the settlement had 160 residents, "three flour mills, telegraph and express," various stores and the drug shop of Weiser and Ring.

From boyhood Hogan Ring had dreamed of becoming a physician but it was not until he had been several years in Whalan that he accumulated sufficient money with which to realize his ambition. In the middle seventies he enrolled at the Bennett College of Eclectic Medicine and Surgery in Chicago and in 1877 he received his diploma. In the last year of his medical course he was married, on August 15, 1875, to Ida Orcelia Lowe, daughter of Mr. and Mrs. Garrison A. Lowe, of Belvedere, Illinois, and immediately after his graduation he brought his wife to Whalan, where they lived for about two years. In Whalan Dr. Ring practiced medicine and continued in the drugstore, of which he became sole owner; subsequently he sold it to A. Backman. In Whalan, also, on December 21, 1877, was born Dr. and Mrs. Ring's first child, Johannes Glenellyn. When the baby was ten months old, Hogan and Ida Ring started with him for Nebraska, traveling by horse and buggy. In Grand Island, Hall County, Nebraska, they made their home for nine years, and there became the parents of two daughters, Verna Helene, born on September 13, 1882, and Mildred, on May 14, 1887. In Grand Island Dr. Ring advanced his medical career and for two years served as county coroner.

In the autumn of 1887 the Ring family left Nebraska for the Pacific Coast and late in December arrived in Ferndale, Humboldt County, California, where Dr. Ring at once began his forty-three years of service in the village and community. In Ferndale two more sons were born to Dr. and Mrs. Ring, Ronald Lowe, on January 31, 1894, and Arden Garrison, on October 31, 1899. Mrs. Ring died on June 7, 1901, from carcinoma of the breast. Two years later Dr. Ring was married to Eleanor Black Andreasen, a widow, of Ferndale; of the second marriage there were two children, Harlan J. and Ingwald M. Ring.

Early in 1930 Dr. Ring, because of rapidly failing health, was taken to San Francisco for temporary hospitalization and special medical care; he died in that city from carcinoma of the rectum on April 26, at the home of his stepson, Dr. Olaf Andreasen, survived by his wife, his children, two stepchildren, one brother, Jacob H. Ring, and a sister, Mrs. Pauline Helgestad, all of whom were in the West, and a sister, Mrs. Oliane Backman, of

Whalan, Minnesota. In 1943, of this group there were living the brother, J. H. Ring, of Ferndale, and the seven children: J. Glen Ring, of Willits, California; Verna (Mrs. Paul W. Hunter), of Fortuna, California; Mildred Ring, of Covelo, California; Ronald L. Ring, of Denton, Texas, colonel in the United States Army; Arden G. Ring, of Seattle, Washington, lieutenant (S. G.) in the United States Naval Reserve; and Harlan J. Ring and Ingwald M. Ring, of Berkeley.

Dr. Ring became a member of the Eclectic Medical Society of California in 1888, and also was a member of the Masons, Odd Fellows, Knights of Pythias, Woodmen of the World and other fraternal orders. He was a good and useful citizen, a faithful and valued physician and a respected and loved resident of his city, where his name is honored and where there are many memories of his kindness and ability. He never failed a patient; and although he has been gone seventeen years, many of his techniques and prescriptions are still in use. A scholarly man, Dr. Ring not only kept abreast of his own profession but he also studied other sciences than medical and wrote of his observations. Early in the century an article of his on astronomy was published in one of the current scientific journals. In his later years he was engrossed in a study of the effect of winds, air pockets and other aerial phenomena on aviation.

Soon after his death the citizens of Ferndale erected a memorial to this beloved physician, a flagstaff that stands on the lawn of the Carnegie Library. Its inscription reads:

In Memory of
Hogan J. Ring, M.D.
in
Recognition of Forty-three Years
of Unselfish Service
to this Community
1851 1930

(To be continued in October issue.)

President's Letter

IN 1943 eight out of ten citizens of the United States claimed that their physicians had a personal interest in them and their welfare, and 74 per cent felt that there were sufficient physicians, nurses and hospitals to meet all needs. In 1947, 79 per cent complain of shortages of nurses, hospital facilities and physicians, and 47 per cent have found it difficult to pay a doctor's fee or a hospital bill. Seventy per cent believe that something might be done to make it easier to meet such expense. In 1943 the term "socialized medicine" was known to about four out of ten persons but in 1947 the percentage of these individuals has increased to 55 per cent.

Nine out of ten physicians are familiar with the Wagner-Murray-Dingell National Health Bill. Eleven per cent consider that the Wagner-Murray-Dingell Bill would be a good thing from the standpoint of the general public. Nine per cent think it would be a good thing from the standpoint of the physicians of the country.[1]

Many physicians believe that their worries concerning the threat of socialized medicine came to an end when the composition of the Congress was altered in the last election. They are familiar with the effort which has been made to pass legislation which might place the Federal Government in control of the practice of medicine, but they feel that there is no need, at this time, for concern about this vital matter. Possibly this is a normal reaction. However, if physicians knew of all of the activities in which proponents of the Wagner-Murray-Dingell Bill are engaged during this period of apparent inactivity, they would realize that their sense of security is unjustified and that this is no time for lethargy.

Recently the Committee on Expenditures in the Executive Departments[2] completed an investigation through a subcommittee authorized to investigate publicity and propaganda of Federal officials in the formation and operation of health workshops. In this report it was stated that "on the basis of hearings held on May 28 and June 18, 1947, it (the Committee) finds that at least six agencies in the executive branch are using Government funds in an improper manner for propaganda activities supporting compulsory national health insurance, or what certain witnesses and authors of propaganda refer to as 'socialized medicine' in the United States." The statement goes on to say:

"The departments, bureaus and agencies now participating in this campaign are:

1. The United States Public Health Service
2. The Children's Bureau
3. The Office of Education
4. The United States Employment Office
5. The Department of Agriculture; and
6. Bureau of Research and Statistics, Social Security Board."

The Committee called attention to "the extraordinary executive pressure" exerted on the staff of the United States Public Health Service to further the campaign for socializing medicine by publishing a portion of a letter written under date of December 10, 1945, by Thomas Parran, Surgeon General of the United States Public Health Service, to all field men and staff operatives throughout the country. This letter referred to the message sent to Congress on November 19, 1945, by President Truman, urging enactment of a national health program. The quotation from Surgeon General Parran's letter is as follows:

> "The appropriate executive agencies of the Government have been specifically instructed by the President to assist in carrying out this legislative program. . . . Every officer of the Public Health Service will wish to familiarize himself with the President's message and will be guided by its provisions when making any public statement likely to be interpreted as representing the official views of the Public Health Service."

All of the evidence presented before this Committee indicated that "health workshops were planned, conducted and largely financed with Federal funds by a key group on the Government payroll who used the workshop method of discussion subtly to generate public sentiment in behalf of . . . socialized medicine. It is evident from the record that most of the planning was done by the Federal officials in Washington prior to each workshop conference." These conferences were organized "to agitate for compulsory health insurance, as then pending in Congress."

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[1] Opinion Research Corporation's official tabulation on surveys of opinions of the public on selected issues and opinions of physicians on selected issues.

[2] Third Intermediate Report of the Committee on Expenditures in the Executive Departments, House Report 786 of the First Session, 80th Congress, submitted July 2, 1947, to the Committee of the Whole House on the State of the Union.

It was found that the Bureau of Research Statistics of the Social Security Board prepared pamphlets and propaganda literature for the C.I.O., the A.F. of L., and the Physicians' Forum (the propaganda agency for the Wagner-Murray-Dingell Bill). This material, prepared at Government expense, supported "socialized medicine in every approach and dismissed contemptuously all arguments controverting the fixed position of the Social Security Board."

Also, attention was called to the fact that the Chief of the Medical Economics Section of the Division of Research Statistics of the Social Security Board had "charted, arranged and conducted the Jamestown (N.D.) Health Workshop," and that this Federal employe had helped draft the Wagner-Murray-Dingell Bill.

The Committee showed that thirteen of these workshops had been planned and carried out. Two of these meetings were held in Minneapolis, the first one on December 20, 1945, and the second on January 9, 1946, and from February 6 to 10, 1946, one of the largest workshops was held in Saint Paul. On that occasion, seven Federal agencies were represented by fifteen Federal employes.

The method used in the workshops is impressive. "A hand-picked group of leaders from various local societies were brought in for the purpose of being trained in workshop procedure. This training program was handled entirely by the employes of the Federal Government. . . . The hand-picked group from the local societies were designated as delegates and in training them they were seated around a conference table with the twenty-one consultants (Federal representatives) lined up behind them." It was urged that "letters be written to senators and representatives advocating immediate action on the Wagner-Murray-Dingell Bill. . . . It was very interesting to note that when left to themselves the delegates seemed unable to think of any particular health problems in the State."

Among the topics listed in the procedures of these meetings are: (1) Technics for the organization of citizen groups; (2) formation of pressure groups; and (3) methods of bringing about group action.

Testimony demonstrating the efficacy of this indoctrination of delegates by the Federal officials was found in the formal summary of the Jamestown Workshop, as presented by the United States Public Health Service. One section urged that congressional candidates and incumbents be polled by the Committee on their stand on the national health program and that their opinions be sent to the State organizations for publication. It was shown clearly that Federal employes arrange the meetings, invite the delegates, train the delegates, preside at the meetings, and then frame the formal summary of resolutions and actions.

One portion of this report calls attention to the fact that it was the activities of the Group Health Association of Washington, D. C., which led to the filing in 1937 of the antitrust proceedings against the American Medical Association under the Sherman Antitrust Act. It is well known that this legal action by the Department of Justice was carried to the Supreme Court of the United States on the basis of the original complaint and accusation of the Group Health Association of Washington, D. C., serving effectively to "intimidate and restrain the activities of the American Medical Association in resisting the Federal propaganda."

In the report it was stated that "for the fiscal year 1946 total expenditures in the executive branch for publicity and propaganda activities were 75 million dollars. During that fiscal year 45,000 Federal employes were engaged, full or part time, in such activities. . . . An increase of approximately 300 per cent in Federal expenditures for publicity and propaganda in a period of five years is deemed by your Committee to be a proper subject for inquiry by the Congress." And the recommendation of the Committee was summed up in these words: "We have, therefore, brought these matters to the attention of the Department of Justice with the request that the Attorney General at once initiate proceedings to stop this unauthorized and illegal expenditure of public moneys."

These are not doubtful or hypothetical inferences. They are not matters of opinion which may be disputed, but are stubborn certainties supported by irrefutable testimony. Having seen these evils, the knowledge which we have obtained should create in us a determination to provide a remedy. We cannot accomplish this by a continuance of complacency.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* George Earl, M.D., Henry L. Ulrich, M.D., *Associate Editors*

PERTUSSIS IMMUNITY AND MIXED ANTIGENS

IN AN earnest effort to simplify immunization procedures and minimize the number of doses of antigens employed, biological manufacturers have recently fostered the preparation and use of "triple" antigens (pertussis, diphtheria, tetanus).

Ramon[5] showed that the immune response to a toxoid (in the form of antitoxin) was enhanced by a mixture of toxoids. Bordet recommended pertussis vaccine and diphtheria toxoid in combination. A number of reports on mixed immunization have since appeared.[2,9] Bigler[1] and others now believe that the degree of immunity to pertussis, tetanus and diphtheria correlates best with the total dosage of antigen used. Lapin[3] has shown that 80 billion Phase I pertussis organisms modify active pertussis whereas 120 billion prevents the disease in older infants. Since the recent increase in pertussis, it has become apparent that bacterial counts in previously used mild antigens have been very inadequate. At Stanford University Clinic, Miller[4] reports the need of additional pertussin antigen when triple "D-P-T" vaccine is used in babies.

The problem before manufacturers is still that of mixing enough pertussis antigen without producing severe local and general reactions. Moreover, the "small volume" alum precipitated pertussis vaccine now available has been shown by Sako[6,7] to be capable of protecting babies as young as two months of age with doses of only 0.2 c.c., 0.3 c.c., and 0.5 c.c. (40 billion A-P).

This has stimulated trials at immunity to other diseases at younger age levels and a number of studies are now in progress in various parts of the country. In young infants it begins to appear[8] that alum-precipitated antigen is superior, whereas in the older infant and child, plain vaccine is effective and more prompt in its recall of "booster" rôle. Although mixed antigens may be used for babies if extra doses of pertussis are given, it would seem best in the light of present knowledge to reserve the triple antigen for booster purposes in the previously immunized child starting kindergarten.

Until a more efficient and reaction-free mixed antigen is available, it may be better to immunize against pertussis alone at the third, fourth, or fifth months, and diphtheria-tetanus at the sixth, seventh, or eighth months with triple mixtures reserved for use as reinforcing agents. As greater improvement occurs in the manufacture of mixed antigens, it is hoped that an ideal preparation for small infants will evolve which will adequately protect against all three diseases.

Erling S. Platou, M.D.

CANCER

THE public has become cancer-minded as evidenced by the millions contributed to the American Cancer Society and the additional millions appropriated out of taxes for cancer research. While money is necessary for research, it is not necessarily true that if enough millions of dollars are available the cause of cancer will be found and the cancer problem solved. Medical discoveries in the past have been the result of the work of a few scientists who have not had much financial backing but who have had that rare type of mind which characterizes research workers.

In facing the problem of cancer, not only is it highly desirable to discover the cause of cancer, but it is also very important to detect the presence of cancer in its early stages when it can be

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1. Bigler, J. A., and Werner, M.: Active immunization against tetanus and diphtheria in infants and children. J.A.M.A., 116:2355, 1941.
2. Hamilton, P. M., and Knouf, E. G.: Combined immunization against diphtheria, tetanus and pertussis. J. Ped., 25:236, 1944.
3. Lapin, J. H. Mixed immunization in infancy and childhood. J. Ped., 22:439, 1943.
4. Miller, John J.: Immunization procedures in pediatrics. J.A.M.A., 134:1064, (July 26) 1947.
5. Ramon, G.: Mixed vaccinations. Internat. Clin., 1:241, 1939.
6. Sako, W.: Studies on pertussis immunization. J. Ped., 30:29, 1947.
7. Sako, W.: Treuting, W. L.; Witt, D. B., and Nichamin, S. J.: Earling immunization against pertussis with alum-precipitated vaccine. J.A.M.A., 127:379, 1945.
8. Sauer, L. W.: The age factor in whooping cough. Am. J. Path., 15:719, 1941.
9. Simon, H., and Craster, C. V.: Simultaneous immunization with combined diphtheria-whooping cough vaccine. J.M. Soc. New Jersey, 38:461, 1941.

more likely cured by our present methods of treatment.

In attaining this later objective, we hear more and more about the desirability of Cancer Detection Clinics composed of a group of specialists. Wangensteen* in a recent article states, "There is need for Cancer Detection Clinics set up at strategic places with competent specialists in the various branches of medicine and surgery. Moreover, there is need for the co-operation of all men and women in attending such clinics, when established, approximately three times a year. If the support in funds and of the public in attendance on such clinics is forthcoming, I believe that it will represent the best use of the available knowledge in dealing with the problem of cancer."

The author is doubtless impressed with the number of patients in whom cancer of the stomach is diagnosed too late for operative cure. He apparently believes that if everyone in the cancer age were examined frequently by competent specialists, more cancer would be detected early enough for cure. This is true. The same would be true if everyone consulted his physician three times a year. But is such a suggestion realistic?

Some 20 per cent of the 140 million people in the country (28 million) are over fifty years of age. At three examinations a year, that would mean 84 million examinations a year—examinations not for cancer of the stomach alone but for cancer of all the organs.

With the chance of perhaps one in a thousand of detecting cancer in this age group, would it be reasonable to expect normal individuals to go to the expense of such frequent examinations? The number would be few. To operate to any extent, such Cancer Detection Clinic would have to be tax supported; and who would advocate loading the present burden of the taxpayers with a possible 84 million examinations?

We do not wish to decry wholly the idea of the Cancer Detection Clinic. It is quite likely that physicians would welcome the establishment of such clinics to which they could refer patients in whom they suspected cancer. We are not convinced, however, that periodic examination of large numbers of normal individuals at Cancer Detection Clinics would contribute valuable additional knowledge to what we now have as to early symptoms.

The problem of cancer and its early detection presents a distinct challenge to the profession today, as it has in the past. Physicians should always be cancer-minded. Every patient, and particularly those in the later age groups, should be approached with the possibility of cancer as well as tuberculosis, cardiac disease, diabetes, and the innumerable other diseases flesh is heir to. It should not be necessary to have separate clinics for the diagnosis of these diseases—whether privately or publicly supported. With consultation easily accessible, the profession should be able to diagnose cancer as early as scientific methods permit, and we question the practicality or necessity of the establishment of Cancer Diagnostic Clinics on a wholesale scale.

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*Wangensteen, Owen H.: The problem of gastric cancer. J.A.M.A., 134:1161, (Aug. 2) 1947.

LIFE INSURANCE FOR STATE ASSOCIATION MEMBERS

THE opportunity for active members of the Minnesota State Medical Association to add a $5,000 policy to their life insurances has been presented in detail to each member. Each member would do well to consider the proposition seriously in view of his particular needs. The group policy is offered by the Northwestern National Life Insurance Company of Minneapolis, and being a term as well as a group policy, the rates are low. Term policies are convertible at any time, the age rate to apply at the time of conversion.

This proposed group policy is recommended by the Council of the Association and should prove particularly attractive to the younger members. To them, the cost of adequate life insurance is an important item at a time when their practice is being built up and unfortunate possibilities are ever present. After all, the main purpose of life insurance is protection for dependents in case of death. Endowment policies protect against the further possibility of reduced income in advanced years and are valuable but more expensive.

The rates of the proposed group policy are contingent on 75 per cent of our State Association membership taking out a policy. Most members should welcome the opportunity to add $5,000 to their life insurance protection. It would seem that the success of the proposition should be assured.

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PREPAID MEDICAL AND SURGICAL CARE FOR MINNESOTA PEOPLE

MR. DON C. HAWKINS
Chairman, Liaison Committee of Insurance Underwriters
Saint Paul, Minnesota

If there were no differences of opinion, there would be no problem in providing Minnesota residents with a plan for budgeting the cost of medical care. However, there are at least two points on which there is no disagreement: first, that the best medical care is and *should be* available; and second, that no matter what method is evolved for providing this care, the doctor is the one who is going to render the service.

If one wants a haircut, one goes to a barber; when one needs his tonsils removed, the logical procedure is to consult a doctor. And when it comes to the method of providing medical and surgical care on a prepayment basis, the question is one of insurance and one should look to a recognized licensed insurance company, which is represented by regular agencies and is capable of providing reliable coverage. It is through this method that the greatest good can be done for the greatest number.

Under a plan utilizing the facilities of recognized insurance companies, coverage provides payment for care wherever it may be rendered, irrespective of the nature of the care, thereby eliminating disappointing experiences arising from limited coverage in a limited area, as when coverage can be provided only within state borders.

The medical profession has always recognized the fact that they have a duty to perform; and every clear-thinking individual should realize that the social uplifter has, in reality, proved of little value, and has, rather, impeded progress in the development of medical care programs. More attention could well be paid to education, sanitation, housing and the like, while special services pertaining to medical care could be left to those who are qualified.

It has been a pleasure and an education to work with the Liaison Committee of the Minnesota State Medical Association. In all of this work, we have not changed from our original objective. There have, however, been a few changes which are beneficial to the public and to the medical profession as well. As the plan progresses, and with the full co-operation of the members of the State Medical Association, additional improvement will be made; and, while other states have plans in effect, we in Minnesota have had opportunity to profit by their mistakes. It may appear to some that this plan is slow in developing, but the reverse is true. Minnesota still leads the field in many phases of the development of prepayment plans.

In seeking to establish a means of providing the people of the state of Minnesota with a plan of prepaid Non-occupational Hospital, Surgical and Obstetrical insurance, at the lowest possible cost, there are certain phases of the plan which are fundamental:

First, it is believed at present that the public interest is best served through the medium of voluntary insurance, underwritten by insurance companies duly licensed by the state insurance commission.

Second, the Minnesota State Medical Association is willing to permit any such licensed insurance company to state that a specific policy or policies are accepted and approved by the Association, provided the benefits in such a policy or policies meet the minimum standards set forth by the Association and the company will co-operate towards the attainment of the objectives of the Association.

In carrying out the instructions of the House

Mr. Hawkins' article presents a review of work done by the Liaison Committees of the Minnesota State Medical Association and the Insurance Representatives toward setting up a plan for prepayment of medical and surgical care, underwritten by private insurance carriers.

of Delegates, the Liaison Committee of the Minnesota State Medical Association has set forth the following Minnesota standards as a recommendation to insurance companies operating in this state:

1. Surgical Expense

Reimbursement for surgeon's fees up to the amounts provided in the schedule of surgical benefits offered on the $150 schedule (schedule offering top benefits of $150 for major surgery) of the former group conference.

2. Medical Expense

The minimum standards for medical service rendered for employed persons shall be:

$3.00 beginning with the fourth call in the home
$2.00 beginning with the fourth call in the office
$2.00 beginning with the first call in the hospital
$20.00 limit on any one disability
$100 limit in any twelve consecutive months

Minimum standards for dependents' medical care:

$2.00 beginning with the first call in the hospital
$60.00 limit in any twelve consecutive months

3. Obstetrical Expense

Up to $50.00 for delivery.

4. General Recommendations

(a) There is to be no interference by the insurance company with the physician-patient relationship.

(b) There is to be no interference by the Association in the operation of the insurance company, although reasonable reports may be requested from time to time as to claim experience and enrollment.

(c) The plan must be flexible; that is, medical expense benefits may be written without surgical and obstetrical benefits, and *vice versa.* Individuals may be insured without including dependents, but insurance companies would be expected to have complete coverage available.

(d) Freedom of contract—an insurance company may use its own forms, may provide higher benefits than the minimum standards specify, and may issue other forms in conjunction with the approved plan.

(e) The Association is to have full control in granting approval and shall retain reasonable rights to withdraw approval.

(f) The plan should be competitive as to its provisions with any other plan in the state, and participating physicians should agree to accept the fees in the schedule as full payment for services rendered to the "low income group."

(g) Co-ordinating Committee—the Liaison Committee—is to act as a Committee to consider problems arising in connection with the plan and to hear complaints of physicians, the public and the insurance companies.

In preparing this report, we have not drawn any unwarranted inferences. There have been no promises made which cannot be performed. We have not confused reality with wishful thinking. Your insurance companies are continually interested in the development of constructive programs for medical care and trust they can at least keep abreast of the needs of the public, if not ahead of them.

EMERGENCY MATERNAL AND INFANT CARE PROGRAM TO END GRADUALLY

By voting just enough funds to wind up activities, Congress has assured the eventual liquidation of the Emergency Maternal and Infant Care Program, which has been in effect since July 6, 1943. Appropriations include only those necessary to permit mothers and babies to complete the medical and hospital care for which they were eligible on June 30, 1947.

No one who was not eligible or potentially eligible for benefits on June 30 can become eligible after that date. However, an eligible wife, who became pregnant prior to June 30 may receive benefits; and her baby can receive medical care under the program up to the age of one year.

Because babies born to mothers who are still eligible may receive care until they are a year old, it is estimated that the program will not be terminated entirely until nearly two years from now. There is a maximum of twenty-one months of care possible—nine months maternity care during pregnancy plus twelve months for the infant after birth.

29,840 Mothers, Infants Receive Care

In Minnesota, operation of EMIC has provided a total of 29,840 wives and infants of servicemen with the best medical and hospital services available. Of this number, 22,810 mothers received prenatal, delivery and postnatal care, while 7,030 babies were provided for when ill and also given immunizations against smallpox, diphtheria and whooping cough. The steady decline of maternal and infant mortality during the period of the program's operation would indicate that this service has had an important bearing on the saving of life and health.

As of last December 31, the operation of this program in Minnesota has cost the federal government in specialists' and general practitioners' fees, as well as hospital charges and nursing services, a total of $2,219,062.27. Federal funds have been administered in Minnesota by the State Department of Health, under the direction of Dr. Viktor O. Wilson, chief of the Section of Special Services. Dr. Wilson says that EMIC "storks" costs in this state have averaged $107.10 a baby, and $46.92 for each sick infant.

The main objective of EMIC was to provide necessary medical care for infants and pregnant wives of men in the four lowest grades of the armed services (including aviation cadets). Wives and children of veterans were also eligible when pregnancy occurred while the men were still in service.

Program Stirs Controversies

Although no responsible men of medicine questioned the basic necessity and desirability of the EMIC program, many of the details of policy and method were often the subject of heated controversy. The feeling that the program was too strongly weighted in favor of specialists labeled it a "specialists' program." Too little recognition was given to the problems of the general practitioner in the rural areas.

The controversy narrowed down to one point, however, and that was the inability of the physician attending a case under the program to exercise his own choice of physician for consultation when complications occurred. The arbitrary policies laid down by the federal administration in Washington, the "Blue Book" and the fact that organized medicine was not consulted at any point in the designing of the program were all sources of dissatisfaction and disagreement.

And now the EMIC program is on the way out. At one time or another the program exemplified nearly every fault or failing that can be expected in a nationally sponsored plan for medical care. A large share of the credit for the ultimate success of the program can be given to the patient co-operation of the physicians of Minnesota, to the administrative handling of the Health Department, to the services of the professional advisory committee and the Academy of Pediatrics which worked so hard to iron out difficulties as they arose.

EMIC has taught many lessons that will be profitable should a comparable national medical program be necessary in the future.

FEDERAL FUNDS USED TO PROMOTE COMPULSORY HEALTH INSURANCE

At least six federal agencies in the executive branch have been found guilty of using Government funds in an improper manner for propaganda activities supporting compulsory national health insurance.

Unlawful use of federal funds was uncovered in a recent investigation in Washington of the participation of federal officials in forming and conducting health workshops. The investigation was carried on by a subcommittee of the Committee on Expenditures in the Executive Department known as the Subcommittee on Publicity and Propaganda.

Hearings were held by the Subcommittee on May 28 and June 18 of this year, which revealed that employes of the U. S. Public Health Service, the Children's Bureau, the Office of Education, the Employment Service, the Department of Agriculture, and the Bureau of Research and Statistics of the Social Security Board has been sent at government expense to a series of "Health Workshop Conferences" held throughout the country during the last two years.

These health workshops, planned and conducted with the aid of federal funds by a key group on the government payroll, were subtly aimed to generate public sentiment in behalf of health insurance legislation such as the Wagner-Murray-Dingell Bill.

First Workshop Held in Saint Paul

Following three meetings held to plan the series of workshop conferences in November and December, 1945, two in Washington, D. C., and one at the University of Chicago, the U. S. Public Health Service launched the series in Saint Paul, Minnesota, February 6-10, 1946. Eighty persons attended this first meeting, 15 of whom were government employes representing seven different federal agencies.

The second health workshop was held in Jamestown, North Dakota, September 27-30, with ninety-eight participating, eighteen of whom were federal employes representing seven agencies. Apart from federal personnel, there were no doctors of medicine in attendance as delegates. No registered doctor of medicine was invited to participate. Other conferences in connection with the workshop series were held at Fargo, Aberdeen, Great Falls (Montana), and at Minneapolis. It is evident from the record that most of the planning for these conferences was done by the Federal officials in Washington prior to each meeting and that the primary aim was to organize pressure groups to agitate for compulsory health insurance then pending in Congress.

Executive Pressure Asserted

That pressure for a national health program was exerted from the top down within the U. S. Public Health Service was apparent even before the current investigation. For concrete evidence of this, one need look no further than a letter sent to Health Service officials and employes by Surgeon General Thomas Parran. The letter referred to the President's November, 1945, message to Congress, which urged enactment of a national health program.

Calling the Presidential message "a subject of highest importance to every citizen," the Surgeon General suggested that "every office holder of the Public Health Service will wish to familiarize himself with the President's message and will be guided by its provisions when making any public statement likely to be interpreted as representing the official views of the Public Health Service."

Through testimony given at the investigation, it can be seen that Health Service employes and officials have been consistently intolerant of honest discussion or debate of issues in their attempts to high-pressure certain legislation through Congress.

Security Board Pays for Literature

Testimony before the Committee reveals that the staff and resources of the Bureau of Research Statistics of the Social Security Board were freely and frequently lent to the preparation of pamphlets and other propaganda literature for the CIO, the AFL, and the Physicians' Forum (a propaganda agency for the Wagner-Murray-Dingell Bill). Much of this was in support of the national health program.

In preparation for the Jamestown Workshop, the Public Health Service distributed to all delegates a packet of pamphlets published by the CIO, AFL and Physicians' Forum, at government expense, urging that letters be written to Senators and Representatives advocating immediate action on the Wagner-Murray-Dingell Bill.

Other evidence before the Committee revealed that the Bureau of Research Statistics of the Social Security Board also prepared pamphlets in behalf of the national health program and sent them out as Government literature through the Department of Agriculture's Interbureau Committee on Postwar Programs.

Committee Recommends Action

Citing from the United States Code (Section 201, title 18) that the use of federal funds for the purpose of influencing opinion on legislation before Congress is unlawful, the Committee brought its findings to the attention of the Department of Justice, requesting that the Attorney General at once initiate proceedings to stop this unauthorized and illegal expenditure of public moneys.

Its report stated that a comparison of figures of the Budget Bureau in 1941 and 1946 shows an increase of approximately 300 per cent in federal expenditures for publicity and propaganda in the five-year period. Such an increase, the report declared, was a "proper subject for inquiry by Congress."

The Committee summarized its purpose in future interim reports as follows: "To examine this expenditure in detail by departments and agencies, with particular reference to illuminating those activities which are directed primarily to influencing the decisions of Congress on pending legislation."

UNIVERSITY RECEIVES GRANT FOR MENTAL HEALTH STUDIES

Expansion of the mental health training program of the University of Minnesota will now be possible following a grant from the United States Public Health Service of $89,363, made available under the National Mental Health Act.

Of the total, the University will use $40,241 to train nurses in the field of psychiatry; $23,936, for an advanced mental hygiene program, and $22,786, for training psychiatric social workers. Another $2,400 will be used for other psychiatry training.

The Mental Health Act authorizes Congress to appropriate $7,500,000 for setting up mental clinics and $400,000 for research and training throughout the United States.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. Dubois, M.D., Secretary

Minneapolis Man Sentenced to Three-Year Prison Term for Criminal Abortion

Re. State of Minnesota vs. Richard Almsted

On August 19, 1947, Richard Almsted, forty-two years of age, 2017 18th Ave. So., Minneapolis, was sentenced to a term of not to exceed three years at hard labor in the State Prison at Stillwater, by the Hon. Lars O. Rue, Judge of the District Court of Hennepin County. Almstead had entered a plea of guilty on July 17, 1947, to an information charging him with the crime of abortion. At that time the Court continued the matter for sentence and ordered the probation officer to make a pre-sentence investigation. Following the investigation made by the probation officer, Judge Rue imposed the three-year sentence.

Almsted, who has no medical training of any kind and gave his occupation as a millwright, was arrested by Minneapolis police officers on July 11, 1947, following the admission of a twenty-nine-year-old married woman to Minneapolis General Hospital suffering from the after-effects of a criminal abortion. In the investigation made by the Minneapolis Police Department and the Minnesota State Board of Medical Examiners, it was learned that Almsted was paid $100 for performing the abortion. The defendant used a catheter but the first attempt was not successful and the procedure was repeated on two subsequent occasions, the last time being July 5, 1947. On July 9, the patient became seriously ill and was removed to the hospital. She has since recovered.

Judge Rue refused to place the defendant on probation, pointing out that the defendant jeopardized the life of the patient, and in addition, had a previous conviction for a felony. The records in the office of the Clerk of the District Court of Hennepin County show that Almsted entered a plea of guilty on June 3, 1940, to a charge of attempted carnal knowledge. For that offense he was sentenced to the State Reformatory at St. Cloud and was released on parole in June, 1944.

Mankato Dentist's License Revoked Following Plea of Guilty of Abortion Charge

Re. State of Minnesota vs. W. A. Groebner

On June 21, 1947, the Minnesota State Board of Dental Examiners revoked the license to practice dentistry formerly held by Dr. W. A. Groebner of Mankato, Minnesota. The action by the Dental Board was taken following Dr. Groebner's plea of guilty on May 24, 1947, in the District Court of Blue Earth County, to an information charging him with the crime of abortion.

Dr. Groebner was arrested on March 25, 1947, following the filing of a complaint in the Mankato Municipal Court charging him with the crime of abortion. According to evidence obtained in an investigation made by the legal authorities of Blue Earth County and the Minnesota State Board of Medical Examiners, Dr. Groebner was paid the sum of $75.00 to perform an abortion on March 21, 1947, on a twenty-four-year-old unmarried Fairmont, Minnesota, woman. The patient died on March 24, 1947, at Fairmont. A postmortem examination was conducted by pathologists of the University of Minnesota, who stated the cause of death to be "acute endometritis and hemorrhagic pneumonia due to an attempted induced abortion." Groebner, twenty-four years of age, graduated from the School of Dentistry of the University of Minnesota, in 1944, and was licensed to practice the same year. At the time Dr. Groebner was given a suspended four-year sentence in the State Reformatory at St. Cloud, the Court forbade Dr. Groebner to practice dentistry either in Mankato or in North Mankato. However, the action of the State Board of Dental Examiners revoking Dr. Groebner's dental license, precludes his practicing anywhere in the State of Minnesota.

PROLONGED LABOR

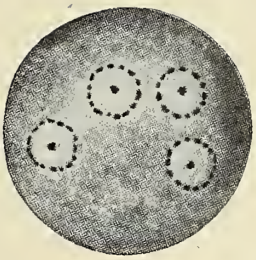
(Continued from Page 948)

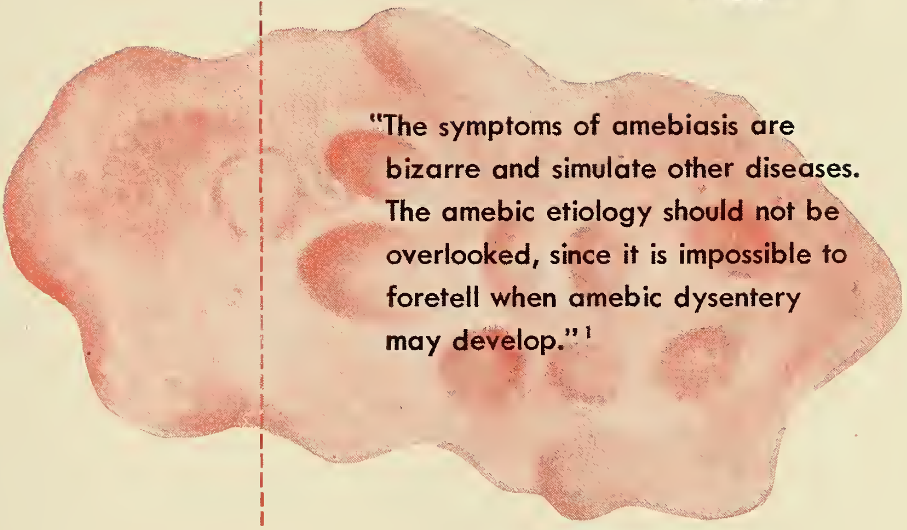
a globular shape, the placenta has separated and should be delivered. The rise of the fundus in the abdomen is rather the sign of the descent of the placenta than of a separation, and indicates the accumulation of clots in the uterus. The propper procedure in expression is for the assistant to grasp the fundus in his right hand with the fingers behind and the thumb in front of the fundus. The uterus is then gently massaged, but there should be no downward pressure. The left hand of the assistant is then placed flat on the abdomen just at the symphysis and pressure is exerted with the right hand while the left hand prevents the uterus from entering the pelvis. As the placenta passes through the cervix, the uterus is lifted up as far as the umbilicus. With this method, there is no danger of inversion of the uterus.

This paper has stressed things that are probably elementary but nevertheless should be reviewed from time to time. I have dealt chiefly with primary inertia and would like to stress chiefly in summation:

1. Prenatal care as a means of prevention.
2. Use of calcium and vitamin D during pregnancy.
3. Care in the use of oxytocics.
4. In postpartum hemorrhage, Pastore's advice on expression of the placenta.
5. Murphy's work with the tocograph.

AMEBIASIS





"The symptoms of amebiasis are bizarre and simulate other diseases. The amebic etiology should not be overlooked, since it is impossible to foretell when amebic dysentery may develop."[1]

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[1] *D'Antani, J. S.: Amebiasis, Recent Concepts of Its Prevalence, Symptomatology, Diagnosis and Treatment, Internat. Clinics 1:100 (March) 1942.*

[2] *Manson-Bahr, P.: Some Tropical Diseases in General Practice, Glasgow, M. J. 27:123 (May) 1946.*

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◆ Reports and Announcements ◆

AMERICAN COLLEGE OF ALLERGISTS

The American College of Allergists will hold a full week of graduate instruction in the many phases of allergy from November 3 to 8, 1947, at the Medical School of the University of Cincinnati. The course is intended not only for those especially interested in allergy but for general practitioners as well. The week will be devoted to addresses by allergists from throughout the country.

Reservations for the course, fee $100.00, and for hotel accommodations should be made with Dr. Fred W. Wittich, 423 La Salle Medical Building, Minneapolis 2, Minn.

VAN METER PRIZE AWARD

The American Association for the Study of Goiter again offers the Van Meter Prize Award of $300.00 and two honorable mentions for the best essays submitted concerning original work on problems related to the thyroid gland. The award will be made at the annual meeting of the Association which will be held in Toronto, Canada, May 6, 7, 8, 1948, providing essays of sufficient merit are presented in competition.

The competing essays may cover either clinical or research investigations; should not exceed three thousand words in length; must be presented in English; and a typewritten double spaced copy sent to the corresponding secretary, Dr. T. C. Davison, 207 Doctors Building, Atlanta 3, Georgia, not later than February 1, 1948.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

A meeting of the Minnesota Society of Neurology and Psychiatry will be held in Duluth, Minnesota, Saturday, September 13, 1947. The scientific program will be presented at 10:00 a.m. in St. Mary's Hospital, as follows:

A Case for Diagnosis—J. J. Call, M.D.

Chordoma, with Case Report—A. H. Wells, M.D., and A. O. Swenson, M.D.

Cerebellar Abscess, Recovery Following Chemotherapy —C. M. Jessico, M.D.

Treatment of Involutional Problems—L. E. Schneider, M.D.

The Use of Xanthydrol to Demonstrate Urea in Brain Tissue—Wm. V. Knoll, M.D.

Alzheimer's Disease, with Case Reports—L. R. Gowan, M.D., and J. E. Seitz, M.D.

Luncheon will be served at 1:00 p.m. in the Kitchi Gammi Club, and will be followed at 2:30 p.m. by deep sea fishing on the North Shore.

GRANTS FOR SCIENTIFIC RESEARCH

The American Allergy Fund has announced grants in aid for research, available to investigators in the biological sciences, both medical and non-medical, whose problems meet the requirements of the Scientific Advisory Council. Preference will be given problems with immediate relationship to allergy, although investigations in physiology, biochemistry, pharmacology, immunology, genetics and other basic sciences are solicited.

Applications should contain the following information:

1. Statement of specific research problems and an outline of the method or methods of procedure to be followed.
2. Description of research facilities in the institution where investigator will employ the grant.
3. A tentative budget.
4. Statement of the applicant's research record, accompanied, if possible, by publications or reprints.

Grants will be made for one year in amounts not to exceed $3,500.00, and may be renewed from year to year, if the progress report warrants continuation.

Applications (seven copies) should be addressed to the American Allergy Fund, 525 Erie Building, Cleveland 15, Ohio, Attention: Scientific Council.

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In Memoriam

ALFRED N. BESSESEN

A. N. Bessesen

Dr. Alfred N. Bessesen, a practicing surgeon of Minneapolis since 1893, passed away August 19, 1947, at his home.

He was the son of John and Delia Bessesen and was born January 18, 1870, in Freeborn County, Minnesota. He attended public schools in Albert Lea, Minnesota, and was active in Christian Endeavor, the Y.M.C.A. and the Lutheran church As a student at Rush Medical College where he received his M.D. degree, March 28, 1893, he took part in establishing the first Intercollegiate Y.M.C.A. chapters.

Dr. Bessesen is said to have been the first intern at St. Mary's Hospital, Minneapolis, where he worked under Dr. James H. Dunn.

Along with A. A. McRae and others, he helped organize the South Side Commercial Club and later conceived and was active in forming the Commonwealth Club. He was a charter life member of the Minneapolis Club and was also a member of Lodge 19, A.F. and A.M.

Dr. Bessesen was a life member of the Fairview Hospital United Church Hospital Association, helped organize, locate, name and build Fairview Hospital, Minneapolis, and served on its first Board of Trustees. He was also the first chief of staff at Asbury Hospital and was on the staff at Deaconess Hospital. It was he who interested Mrs. George Christian in building Thomas Hospital for Fairview, to be devoted to the care of tuberculosis patients.

He was a member of the American College of Surgeons, the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He retired from practice several years ago on account of ill health but resumed practice during the war on account of the shortage of physicians.

Dr. Bessesen was married to Dr. Florence E. Holland of Chicago on August 6, 1895. He is survived by his wife and four children—Dr. Alfred N. Bessesen, Jr., Dr. Daniel H. Bessesen, Grace and Florence, all of Minneapolis: three brothers—N. D. Bessesen, H. J. Bessesen, and Dr. William A. Bessesen, all of Minneapolis; five grandchildren, and one great-grandchild.

On the cover page of his first account book was placed the following which shows better than other words his character:

My Guide

To respect my country, my profession, and myself. To be honest and fair with my fellowmen, as I expect them to be honest and square with me. To be a loyal citizen of the United States of America. To speak of it with praise and act always as a trustworthy custodian of its good name. To be a man whose name carries weight with it wherever it goes.

To base my expectations of reward on a solid foundation of service rendered; to be willing to pay the price of success in honest effort. To look upon my work as an opportunity to be seized with joy and made the most of and not as painful drudgery to be reluctantly endured.

To remember that success lies within myself, in my own brain, my own ambition, my own courage, and determination. To expect difficulties, and to force my way through them; to turn hard experiences into capital for future struggles.

To believe in my own proposition, heart and soul; to carry an air of optimism in the presence of those I meet; to dispel ill temper with cheerfulness, kill doubts with a strong conviction, and reduce active friction with an agreeable personality.

To keep my future unmortgaged with debts; to save as well as earn. To cut out expensive amusement until I can afford them. To steer clear of dissipation and guard my health of body and peace of mind as a most precious stock in trade.

Finally, to take a good grip on the joys of life, to play the game like a man; to fight against nothing so hard as my own weaknesses, and endeavor to grow in strength, a Christian, a gentleman.

"So I may be courteous to men, faithful to friends,
True to my God, a fragrance in the path I trod."

GEORGE T. AYRES

Dr. George T. Ayres of Ely died July 17, 1947, at Halifax, Nova Scotia, while on vacation.

Dr. Ayres was born at Kalida, Iowa, February 1, 1875. He attended Wooster College at Wooster, Ohio, and the medical school of Western Reserve for two years before obtaining his M.D. degree from Rush Medical College in 1897. He interned at Presbyterian Hospital in Chicago.

Dr. Ayres became associated with the late Dr. Charles G. Shipman at Ely and when Dr. Shipman retired about forty-one years ago, Dr. Ayres and Dr. P. M. Parker took over the Shipman Hospital. When Dr. Parker retired, Dr. Ayres operated the hospital until 1944 when he retired. For the past year he had resided in Phoenix, Arizona.

A former member of the Ely city council, Dr. Ayres was one of the leaders of the Ely Chamber of Commerce and was associated with Dr. H. N. Sutherland for forty-one years. Dr. Ayres was also a member of the Ely school board, was active in Masonic circles, the Rotary Club and other fraternal and civic organizations.

He is survived by his wife and a daughter, Mrs. Victor Roterus of Flint, Michigan.

NORBERT GEORGE BENESH

Dr. N. A. Benesh of Minneapolis passed away June 29, 1947, at the age of thirty-nine.

Born at Ely, Iowa, December 1, 1907, Dr. Benesh obtained his M.D. degree from the University of Nebraska Medical School in 1931. He interned at Asbury Hospital in Minneapolis.

Dr. Benesh started his general practice on the East Side in 1932, and worked in that district until the

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time of his death. He was a member of the staff of the Deaconess Hospital and was treasurer of the Lutheran Deaconess Hospital Medical and Surgical Society.

Dr. Benesh was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He was also a member of the Cataract Lodge No. 2, A.F. and A.M. and the Calhoun Beach Club.

Surviving are his wife, Margaret Ann Benesh, and two brothers, Dr. Louis A. Benesh of Minneapolis and Lester H. Benesh of Battendorf, Iowa.

Dr. Benesh was an ardent sportsman. He was especially fond of hunting and fishing and spent his spare time in South Dakota or northern Minnesota.

JOHN E. CREWE

Dr. John E. Crewe, a practicing physician in Rochester for many years and a former coroner of Olmsted County, died on his seventy-fifth birthday, July 22, 1947.

John Crewe was born at Hoboken, New Jersey, July 22, 1872. He attended the University of North Dakota at Grand Forks for two years before he attended the University of Minnesota from which he obtained his medical degree in 1896. After interning at Minneapolis General Hospital and the Deaconess Hospital at Grand Forks, North Dakota, he practiced from 1897 to 1902 at Zumbrota, Minnesota.

He located at Rochester, Minnesota, in 1902, and served as coroner of Olmsted County for thirty-six years before his retirement last year. He was a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations.

Dr. Crewe is survived by his wife, two daughters, Mrs. Dorothy Bishop of Minneapolis and Mrs. C. H. Slocumb of Rochester, and a son, Charles W. Crewe of Minneapolis.

JOSEPH WILLIAM GAMBLE

Dr. J. W. Gamble, a practicing physician for twenty-five years at Albert Lea and head of the Gamble Clinic, died August 6, 1947.

Dr. Gamble was born at St. Cloud, Minnesota, December 23, 1891. He attended South High School in Minneapolis and Rochester High School before studying medicine at the University of Minnesota where he was graduated in 1918. After interning at the University Hospital and the U. S. Naval Hospital, Great Lakes, Illinois, he practiced at Rochester, Minnesota, from 1919 to 1921 and was located at the Veterans Hospital, Minneapolis, from 1921 to 1922.

After being located in Albert Lea for two years he was joined by his two brothers, Dr. Ross M. Gamble and Dr. Paul M. Gamble, and the Gamble Clinic was formed. Dr. Gamble was a member of the Freeborn County Medical Society, the Minnesota State and American Medical Associations. The region of Albert Lea has always known Dr. Gamble as "Dr. Will." He has

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always been intensely interested in civic activities and has shown leadership in civic betterment projects and in boys' work. Since 1929 he had been a director of the Albert Lea Y.M.C.A. He was a member of numerous other organizations including the American Legion, the Albert Lea Kiwanis Club, the Chamber of Commerce, A.F. and A.M., and Toastmasters International. He was also a long-standing member of the First Baptist Church.

Dr. Gamble is survived by his widow, a son, Elbert J. Gamble, at present attending the University of Minnesota, and a daughter, Mrs. Owen Beard, who, herself, is a physician and who lives at Little Rock, Arkansas. Dr. Paul Gamble also survives. Dr. Ross Gamble died in 1934.

Dr. Will had been in poor health since March of 1947, when he suffered a coronary occlusion.

KRISTIAN JONASSON

Dr. Kristian Jonasson, a fellow in obstetrics and gynecology at the Mayo Foundation from 1943 until 1946, died by suffocation from a fire at Reykjavik, Iceland, on July 27, 1947.

Dr. Jonasson was born May 12, 1914, at Saudarkrokur, Iceland. He received his M.D. degree from the University of Iceland in 1941, interned at several hospitals in Iceland and practiced at Isafiord, Iceland, before going to Rochester. He practiced at Reykjavik before his death.

HAROLD E. MARSH

Dr. Harold E. Marsh of Madison, Wisconsin, died on July 12, 1947.

Dr. Marsh was born October 11, 1892, at Quincy, Massachusetts; received the degree of M.D. in 1913 from Tufts College, Boston, Massachusetts; and was an intern at the Malden Hospital, Malden, Massachusetts, from July, 1913, to July, 1914. He entered the Mayo Foundation as a special student in medicine, April 1, 1915. From April, 1918, to July, 1919, he served as first lieutenant in the Medical Corps. He left the Mayo Foundation May 29, 1920, to practice internal medicine at the Jackson Clinic, Madison, Wisconsin. Dr. Marsh was a member of the American Medical Association and the Mississippi Valley Medical Society.

REINHART GILBERT OLSON

Dr. Reinhart G. Olson of Minneapolis died July 12, 1947, at his home, aged sixty-seven years.

Reinhart Olson was born at Nicollet, Minnesota, February 24, 1880. He received his medical degree from Hamline Medical College in 1908 and served his internship at Swedish Hospital, Minneapolis. Until 1917, when he joined the army, he practiced at Nicollet. He enlisted in World War I and was stationed at St. Armand, France, and after the Armistice, went to Germany with the Army of Occupation. After discharge from the army in August, 1919, he became established in Minneapolis.

Dr. Olson took postgraduate work in eye, ear, nose and throat diseases in Chicago in 1914, and at the New York Postgraduate Hospital in 1919-1920.

He was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, a Knight Templar, and a member of the Zuhrah Temple of the Shrine. He was also a member of the staff of the Swedish Hospital.

Dr. Olson is survived by his wife, and daughter, Mrs. William C. Droge of Saint Paul.

JOSEPH H. VOGEL

Dr. Joseph H. Vogel, a prominent physician and surgeon of New Ulm, died July 21, 1947, from a heart attack. He was sixty-eight years old.

Born in New Ulm, March 28, 1878, he graduated from Rush Medical College in 1903 and began practice at New Ulm. He took postgraduate work in Chicago in 1914 and in Vienna in 1928. A number of years ago he and Dr. Otto Seifert established the Vogel-Seifert Clinic.

Dr. Vogel was a member of the Redwood-Brown Medical Society, the Minnesota State and American Medical Associations, and the Southern Minnesota Medical Association. He was a staff member of the Union and Loretto Hospitals.

His hobby was roses, and he was nationally known as an expert in the growing of roses. In 1941, he was elected president of the Minnesota Rose Society.

Dr. Vogel had considerable real estate holdings including buildings in the heart of New Ulm. He was president of the Farmers and Merchants Bank of New Ulm and director of the State Bond and Mortgage Company and the American Artstone Company.

OTTO J. SEIFERT.

CHARLES D'ARCY WRIGHT

Dr. Charles D'Arcy Wright, a physician for fifty years in Minneapolis, died July 23, 1947, at his home.

Dr. Wright was born at Chatham, Ontario, November 22, 1863. He attended the University of Wisconsin before obtaining his medical degree from the University of Michigan in 1887. He took numerous postgraduate courses in Paris, London, Berlin, and Vienna, where he specialized in the special senses.

After practicing in Norway, Michigan, from 1887 to 1895, he became a member of the faculty of the University of Michigan from 1895 to 1897.

Dr. Wright captained the football team at the University of Michigan and became a well-known golfer, at one time winning the senior golf tournament.

He came to Minneapolis in 1897 and became an eye, ear, nose and throat specialist. He was a member of the American College of Surgeons, The American Society of Ophthalmology, the Hennepin County Medical Society, and the Minnesota State and American Medical Associations.

Dr. Wright is survived by a daughter, Mrs. Muriel Wright Fould, wife of Maurice Fould of France, a grandson, John D'Arcy Wright, and a brother, G. M. Wright of Denver.

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Of General Interest

Dr. Silas C. Andersen, Minneapolis, has been elected a trustee of Dana College and Trinity Seminary in Blair, Nebraska.

* * *

A former fellow in the Mayo Foundation, Dr. Glen G. Gibson has been advanced to the post of professor and head of the Department of Ophthalmology, Temple University of Medicine, Philadelphia.

* * *

On July 31, Dr. J. T. Anderson discontinued his medical practice in Red Lake Falls. At the time he had no immediate plans for the future beyond a vacation trip with his family.

* * *

Dr. F. J. Braceland and Dr. P. H. Heersema, Mayo Clinic staff members, attended a meeting of the governor's Advisory Council on Mental Health held in Saint Paul on July 21.

* * *

Dr. George H. Hall, formerly of Minneapolis, has been named chief of the surgical service at Veterans Hospital in Fargo, North Dakota. He succeeded Dr. John J. Tyson, who was transferred to Des Moines, Iowa.

* * *

"The Role of Psychiatry in Probation and Parole Service" was the title of an address delivered by Dr. M. N. Walsh, Rochester, at a meeting of the Minnesota State Probation and Parole Association held in St. Cloud on July 21.

* * *

Dr. Ellis N. Cohen, who is serving a fellowship in the Department of Anesthesiology at the University of Minnesota, was married in Chicago on August 9 to Miss Sylvia Rosenfeldt, former psychologist in the Division of Public Institutions for the State of Minnesota.

* * *

In Blue Earth, Dr. J. A. Broberg has resigned as city health officer after almost forty-five years of service. First appointed to the office in 1902, Dr. Broberg has held the position to the present time with the exception of two short intervals when he was out of the state.

* * *

At the annual meeting of the American Medical Association, this summer, Dr. Arthur B. Hunt, Rochester, was elected secretary of the Section on Obstetrics and Gynecology, and Dr. F. P. Moersch, Rochester, was re-elected secretary of the Section on Nervous and Mental Diseases.

* * *

At the meeting of the American Society of Oral Surgery held in Boston in late July, Dr. John B. Erich of Rochester presented two motion pictures entitled, "Treatment of Soft Tissue in Facial Injuries" and "Treatment of Patients with Multiple Fractures of All the Facial Bones."

Dr. Charles G. Sheppard, Hutchinson, has been elected president of the Crow River regional chapter of the American College of Physicians and Surgeons, while Dr. Kenneth Peterson, Hutchinson, has been named vice president, and Dr. J. D. Selmo, Norwood, secretary-treasurer.

* * *

Physicians from nine southwestern Minnesota counties met in Worthington on July 23 to discuss organization of a district public health unit for their area. Representatives present were from Nobles, Rock, Pipestone, Murray, Jackson, Cottonwood, Lincoln, Lyon and Redwood counties.

* * *

On August 1, Dr. F. B. Schleinitz moved from Battle Lake to Hankinson, North Dakota, to become the only physician in that town. Dr. Schleinitz was formerly associated with Dr. C. A. Boline in Battle Lake, where he had practiced since 1938. During the war he served in the army medical corps for four years.

* * *

The Interim Commission of the World Health Organization has appointed a former fellow in medicine in the Mayo Foundation, Dr. Thorstein Guthe, to the secretariat as a specialist in veneral disease. Dr. Guthe, who was with the Mayo Foundation in 1940, has been assistant to the surgeon general of public health of Norway.

* * *

At the Red Wing Chamber of Commerce meeting on August 5, a proposal was made to stage a county-wide x-ray survey to detect cases of tuberculosis and other diseases in their early stages. The proposal was referred for further study to the organization's Education and Public Health Committee, which is headed by Dr. Royal V. Sherman of Red Wing.

* * *

During August, while Dr. M. G. Flom of Zumbrota was on vacation, his medical practice was conducted by Dr. Frederick W. Engstrom of Wanamingo. Dr. Engstrom, a graduate of the University of Minnesota Medical School, recently completed his internship at Detroit Receiving Hospital in Detroit, Michigan. He is the son of Dr. and Mrs. F. A. Engstrom of Wanamingo.

* * *

Visiting in the United States while studying health conditions and therapeutic methods, Dr. Sigrid Holm, chief assistant at a chest clinic in Copenhagen, Denmark, praised the mass chest x-ray survey being conducted in Minneapolis. "The city is doing a very good job," stated Dr. Holm.

The Danish physician said that last year, Copenhagen x-rayed about 80 per cent of the population in the fifteen to thirty-four age group, and this year plans are to x-ray the persons over thirty-four years of age.

On August 15, Dr. Merrill E. Henslin of Le Roy moved to Cresco, Iowa, to enter a partnership with Dr. Walter Bockhoven of that city. Dr. Henslin did not completely close his medical practice in Le Roy, however, for he is maintaining office hours there on Tuesday and Thursday afternoons and Saturday evenings each week. His father, Dr. A. E. Henslin, is continuing to practice in Le Roy.

* * *

Dr. J. E. Henry, who recently completed a fifteen-month internship at Minneapolis General Hospital, has joined his brother Dr. C. J. Henry in practice at the Henry Clinic in Milaca. A graduate of the University of Minnesota Medical School, Dr. J. E. Henry was married in Foley on June 23 to Miss Dolores Wessner, who has been a nurse at the Henry Memorial Hospital in Milaca for the past three years.

* * *

Dr. B. E. Hall, Rochester, participated in a symposium on "Radioactive Isotopes in Therapy of Malignant Disease" at the Chemical Research Conference conducted by the American Association for the Advancement of Science in New London, New Hampshire, August 10 to 15. Dr. Hall's subject was "Radioactive Phosphorus." He also participated in a round-table discussion on "Methods and Results in Chemotherapy of Malignant Disease."

* * *

Dr. W. Henry Hollinshead, former professor of anatomy at Duke University School of Medicine, has joined the staff of the Mayo Clinic as consultant in anatomy and professor of anatomy in the Mayo Foundation and Graduate School of Medicine of the University of Minnesota. In addition to directing graduate training in anatomy, he will continue research on the peripheral nervous system and mechanisms in the reflex control of respiration and blood pressure.

* * *

After forty-five years of practice in Saint Paul, Dr. P. H. Bennion announced in August that he was retiring from active medical practice and planned to move to Ismay, Montana, to make his home with his daughter. A civic-minded person, Dr. Bennion has been active in the development of the Midway district in Saint Paul. He has been a staff member of Midway Hospital and a member of the Osman Temple of the Shrine, the Midway Club, and the Merriam Park library board.

* * *

In Mankato, Dr. R. G. Hassett recently announced that Dr. Norman F. Stone, formerly of Minneapolis, has become associated with him in medical practice. A graduate of the University of Minnesota Medical School in 1944, Dr. Stone served for two years in the navy in the south Pacific. Upon his release from military service in July, 1946, he took postgraduate work at the University of Minnesota for one year before joining Dr. Hassett in Mankato.

* * *

Heron Lake recently acquired another physician when Dr. Harold Williamson, formerly of Cleveland, Ohio, joined the Heron Lake Hospital staff and opened a

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medical practice with Dr. J. Roger Nickerson. The two physicians are cousins and for many years have planned to practice medicine together in Minnesota. Dr. Williamson is a graduate of Western Reserve Medical School and served his internship at Akron City Hospital, Akron, Ohio. After three and one-half years in the army medical corps, he returned to be chief resident physician in the Cleveland City Hospital before accepting an invitation to practice in Heron Lake.

* * *

Dr. William Black, who recently completed a three-year Mayo Foundation fellowship in general surgery, is now associated with Dr. O. J. Seifert and Dr. L. H. Domeier in New Ulm.

A graduate of Temple University Medical School, Dr. Black served his internship and a residency at St. James Hospital in Butte, Montana. He then began his fellowship with the Mayo Foundation but interrupted it to serve for two years in the army medical corps. Following his release from military service, he completed the surgical fellowship and then joined Drs. Seifert and Domeier in New Ulm.

* * *

Dr. Alfred G. Sherman, a former naval flight surgeon with six years of military service, has joined in medical partnership with Dr. Carleton S. Strathern of St. Peter.

A native of Glencoe, Dr. Sherman received his medical degree from the University of Minnesota Medical School and served his internship at Minneapolis General Hospital. In 1939 he began his medical practice in Ajo and Kingman, Arizona, and in 1941 he entered the navy, specializing in aviation medicine.

In joining Dr. Strathern in St. Peter, he is replacing his partner's father, Dr. F. P. Strathern, who has announced his semi-retirement from the medical profession.

* * *

Members of the medical and nursing professions, plus several hundred lay citizens of Cloquet, gathered on July 24 to pay tribute to Mathilda C. Backes, Cloquet community nurse, for the outstanding work she had done since her arrival in the city in 1924. The honor ceremony took place one week before her departure for Cold Spring where she had accepted a position as industrial nurse.

Master of ceremonies for the event was Dr. C. E. Norberg of Cloquet, while one of the speeches of praise for Miss Backes was delivered by Dr. N. O. Monserud, Cloquet, who represented the medical profession. The nurse was presented with a watch and a purse as tokens of appreciation of Cloquet residents.

* * *

A new member of the Hedemark Clinic in Ortonville is Dr. Robert P. Gallagher, who has just completed a year of postgraduate study at the University of Minnesota Medical School.

A Minnesota graduate, Dr. Gallagher served his internship at Queens Hospital in Honolulu, T. H., and then spent more than two years in the army medical corps. After his discharge from military service he returned to Minnesota for postgraduate training before joining Dr. Truman Hedemark and Dr. Homer Hedemark in Ortonville.

* * *

At a forum at the University of Minnesota on July 31 the medical profession was attacked by Fred Gram, public relations director for Group Health Mutual, Inc.

"Restrictive state laws urged on legislatures by the medical profession make it exceedingly difficult for co-operative health organizations to function," he complained.

He alleged the medical profession was badly organized, and stated: "Doctors are afraid to join clinics in smaller cities and rural areas for fear of facing the wrath of the American Medical Association."

He asserted that co-operative medical plans would result in a healthier population.

The meeting was sponsored by the campus chapter of the American Veterans Committee.

* * *

At the grand banquet of the International Congress of Pediatrics, held in New York in July, Dr. Henry F. Helmholz, former chief of the Section on Pediatrics in the Mayo Clinic and professor of pediatrics in the Mayo Foundation, was awarded the Carlos J. Finlay gold medal by the president of Cuba. During the previous week, at the Pan American Congress of Pediatrics in Washington, D. C., Dr. Helmholz was given honorary membership in the Latin American division of the American Academy of Pediatrics and the Brazilian Pediatrics Society. The awards were made to the Rochester physician in recognition of his work in furthering pediatric education and practice in Latin America by establishing

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paid scholarships in various medical schools of the United States for graduates of Latin American medical schools.

* * *

In an article in a recent issue of the *Journal of the American Medical Association,* Dr. Owen H. Wangensteen, head of the Department of Surgery in the University of Minnesota Medical School, stated:

"The public is willing to spend unlimited funds to conquer the scourge of cancer. . . . Establishment of cancer detection clinics, staffed by specialists, affords the best promise of early recognition of cancer. Women over forty and men past fifty should report regularly to such clinics."

In regard to the long-range cancer problem, Dr. Wangensteen advocated the setting up of a cancer commission to spearhead research. "This commission should be given adequate funds and authority to draft competent workers with research experience," he declared.

* * *

At a reunion of former interns of St. Mary's Hospital in Duluth, Dr. E. L. Tuohy was honored as the oldest ex-intern present. A portrait of Dr. Tuohy was unveiled at a special luncheon meeting, and Dr. W. J. Ryan of the hospital's intern committee paid tribute to the honored physician.

Dr. Tuohy, who is now chief of laboratories at St. Mary's Hospital, entered the hospital as an intern in 1905 and remained as a resident in 1906. He was instrumental in setting up the hospital's pathology department and later organized the hospital's program of clinicopathological conferences.

Among the guests at the honor luncheon was Dr. Tuohy's son, Dr. Edward B. Tuohy, former staff member of the Mayo Clinic and now professor of anesthesiology at Georgetown University in Washington, D. C.

* * *

Community clinics—possibly even traveling clinics—might help in the control of alcoholism as a social problem, Dr. Stanley B. Lindley recently suggested. As superintendent of the Willmar State Hospital, which was established for inebriates, Dr. Lindley is convinced that the problem of keeping alcoholism within bounds is too large to be handled by any state institution.

"Lots of persons who are drinking too much would never think of coming here for treatment," he said, "but they might seize the opportunity to drop in at a local clinic to get the trouble straightened out."

Psychiatrists and social workers, operating from such a clinic, could prevent a large amount of future difficulty and could ease the daily pressure on courts and jails.

"But the cost would be considerable," Dr. Lindley stated. "Men of experience don't come cheaply. And one of the essentials would be the selection of a competent man to head the program."

* * *

Two Mayo Clinic staff members resigned their positions this summer to join the faculty of Georgetown University Medical Center, Washington, D. C.

Dr. Edward B. Tuohy, a member of the anesthesiology staff of the clinic since 1935, became professor of anesthesiology at Georgetown University, while Dr. Paul C.

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Kiernan, a member of the clinic surgical staff for four years, became an associate professor of surgery at the school.

Dr. Tuohy received his medical degree at the University of Pennsylvania in 1932 and interned at Roosevelt and New York Hospitals in New York and at Ancker Hospital in Saint Paul. He began a fellowship in the Mayo Foundation in 1933, and in 1936 he received an M.S. degree from the University of Minnesota.

Dr. Kiernan, a graduate of George Washington University, Washington, D. C., began a fellowship in surgery in the Mayo Foundation in 1940 and received an M.S. degree from the University of Minnesota in 1943.

* * *

Twenty-two physicians who have each completed a half century of medical practice in Minnesota were honored by admission to the "Fifty Club" at the annual meeting of the Minnesota State Medical Association in Duluth on July 1.

Membership in the club is limited to physicians who have practiced medicine for at least fifty years in Minnesota. The new members admitted this year were Drs. J. F. Corbett, George B. Hamlin, G. D. Head, A. J. H. Hammond, all of Minneapolis; L. A. Nelson, Robert Earl, W. R. Ramsey, of Saint Paul; Homer P. Dredge, Sandstone; J. F. S. Gendron, Grand Rapids; John A. Thabes, Sr., Brainerd; Morrill E. Withrow, International Falls; George H. Mesker, Cambridge; William L. Palmer, Albert Lea; George F. Reinecke, New Ulm; George J. Schottler, Dexter; William E. Wray, Campbell; A. H. Brown, Pipestone; M. A. Brown, Milan; John E. Crewe, Rochester; S. A. Drake, Lanesboro; Roland Gilmore, Bemidji, and J. H. Haines, Stillwater.

* * *

A prediction that Tokyo would soon be only twenty-three hours distant by air was made by Dr. Jan H. Tillisch in a talk, July 17, before the Rotary Club of Rochester.

In addition to being assistant professor of medicine in the Mayo Foundation and consultant in medicine in the Mayo Clinic, Dr. Tillisch is also medical director of Northwest Airlines. In his talk to the Rotary Club he described a trip to the Orient which he had just made by air to observe personally the physical conditions under which pilots must fly.

Illustrating his words with projected color photographs, Dr. Tillisch described conditions in Alaska, the Aleutian islands, Tokyo, Seoul in Korea, Shanghai and Manila.

"When the Boeing Stratocruiser passenger planes are put in operation, you'll be able to fly from here to Tokyo in as little as twenty-three hours," he stated. (Present time, Rochester to Manila: forty-five hours.) "It will be a very easy trip," he added. "Ocean flying is much smoother than flying over land."

* * *

Captain Louis H. Roddis (MC), USN, Chief of the Publications Division of the Bureau of Medicine and Surgery and Editor of the *United States Naval Medical Bulletin*, Navy Department, Washington, D. C., has been awarded the Navy Commendation Ribbon for the excellent service he rendered in World War II as Senior Medical Officer of the U.S.S. *Relief*.

The citation reads:

> "For excellent service in the line of his profession while serving as Senior Medical Officer of the U.S.S. *Relief* from 4 March to 9 September, 1944. His professional skill and devotion to duty contributed materially to the smooth and efficient functioning of the Medical Department. During Fleet concentrations he rendered invaluable consultation service and dealt with many medical problems, both in disease prevention and evacuation of the sick and wounded. Under his direction, during the capture of Saipan and Tinian, large numbers of serious casualties were embarked and transported, many directly from the beachheads. His performance of duty was outstanding and his conduct was at all times in keeping with the highest traditions of the United States Naval Service."

Captain Roddis graduated from the University of Minnesota Medical School in 1913 and entered the Naval service in 1914. He is considered an outstanding Medical Historian and has written several books on the subject. Captain Roddis' professional specialty is internal medicine and he is a Fellow of the American College of Physicians and a Member of the American Board of Internal Medicine.

* * *

Announcement has been made of eleven recent appointments to the staff of the Mayo Clinic.

Dr. Edwin D. Bayrd, a graduate of Harvard Medical School who became a fellow in medicine in the

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Mayo Foundation in 1944, has been appointed a consultant in medicine.

Dr. Talbert Cooper, a graduate of Emory University who entered the Mayo Foundation as a fellow in medicine in 1941, has been appointed a consultant in medicine.

Dr. Edward D. LeLamater, a graduate of Johns Hopkins and Columbia Universities who entered the Mayo Foundation in 1946 as first assistant in mycology and fellow in dermatology, has been appointed consultant in mycology in the Section on Experimental Bacteriology.

Dr. Albert Faulconer, Jr., a graduate of the University of Kansas who became a fellow in anesthesiology in 1946, has been appointed to the anesthesiology staff.

Dr. Lloyd E. Harris, a graduate of Rush Medical College who has been practicing pediatrics in Lafayette, Indiana, has been appointed to the preventive pediatrics staff.

Dr. John R. Hodgson, a graduate of the University of Michigan who entered the Mayo Foundation as a fellow in radiology in 1943, has been appointed to the radiology staff.

Dr. Mavis P. Kelsey, a graduate of the University of Texas who began a fellowship in medicine in 1939, has been appointed to the staff in general medicine and surgery.

Dr. Frank D. Mann, a graduate of the Universty of Minnesota who became first assistant in clinical pathology in 1946, has been appointed to the staff in clinical pathology.

Dr. Gordon M. Martin, a graduate of the University of Nebraska who became a fellow in physical medicine in 1941 and who has been head of the Department of Physical Medicine at the University of Kansas Medical School, has been appointed to the staff in physical medicine.

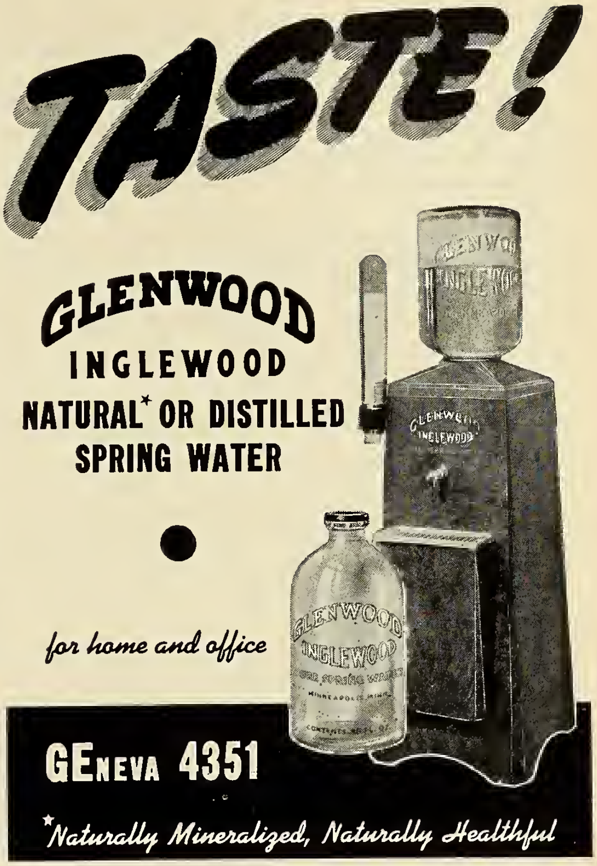
Dr. John A. Paulson, a graduate of the University of Minnesota who became a fellow in anesthesiology in 1942, has been appointed to the anesthesiology staff.

Dr. William G. Sauer, a graduate of the University of Cincinnati who became a fellow in medicine in 1942, has been appointed to the staff in general medicine and surgery.

HOSPITAL NEWS

For the thirty-first consecutive time, Dr. C. L. Sherman of Luverne has been re-elected as president of the Southwestern Minnesota Sanatorium board. Dr. Sherman has been president of the board since it was organized in 1915.

Also re-elected to offices on the board are Edwin Brickson, Adrian, vice president; Dr. S. A. Slater, Worthington, superintendent and secretary; and N. L. Zender, St. James, member of the Executive Committee.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* * *

Miss Margaret Ossendorf left the Staples Municipal Hospital in July to become superintendent of the Melrose Hospital. Miss Ossendorf had served as first floor supervisor at the Staples hospital and had been acting superintendent during the absence of Miss Marceline Lano, the regular superintendent.

* * *

A tax increase to help raise funds for the construction of new buildings and equipment at Glen Lake Sanatorium, Minneapolis, was voted by the Hennepin County commissioners on July 31. One-half mill of the increase in rate, from 2.75 to 4.30, will provide $146,500 for construction.

* * *

Dr. William C. Heiam, Cook, has announced that a new autoclave sterilizer has been installed at the Cook General Hospital. The latest model available, it was purchased at a price of $700.

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New chief of staff at Fairview Hospital (Columbia Heights), Minneapolis, is Dr. H. D. Good, a graduate of the University of Minnesota Medical School, who has practiced in Columbia Heights since 1926. Also recently elected to the hospital staff are Dr. Arthur C. Skjold, vice chief of staff, and Dr. Donald B. Frane, secretary-treasurer.

* * *

At a recent meeting of the board of directors of the Union Hospital Association, Inc., in New Ulm, George D. Erickson was re-elected president of the board. Other officers are Dr. Albert Fritsche, vice president; George Hogen, secretary, and F. H. Retzlaff, treasurer.

* * *

The twenty-bed Halloran Hospital at Jackson has been purchased from Dr. Walter H. Halloran and is now being conducted by the Sisters of Charity of Our Lady, Mother of Mercy, in the Winona diocese. Included in the transaction was the modern ten-room home of Dr. Halloran which has been converted into a convent for the Sisters.

* * *

Four Saint Paul businessmen were named members of the board of governors of Miller Hospital, Saint Paul, at a meeting of the board on August 12, it has been announced by Shreve M. Archer, chairman of the board. The newly appointed members are Frank J. Anderson, C. F. Codere, Bernard H. Ridder and F. K. Weyerhaeuser.

* * *

Former assistant superintendent of the University of Minnesota Hospitals, William K. Klein, has begun his new duties as superintendent of Hurley Municipal Hospital in Flint, Michigan. A graduate of the University Business Administration School, Mr. Klein has been a member of the University Hospitals' staff for five years.

* * *

Dr. Paul R. Hawley, head of the Veterans Administration Department of Medicine and Surgery, arrived in the Twin Cities on August 9 to spend a week inspecting VA hospitals in the area as part of a nationwide tour of veterans' hospital facilities.

With Dr. Hawley on the tour were Miss Dorothy Wheeler, national director of VA nursing service; Dr. John Barnwell, chief of the tuberculosis division, and Dr. Harvey Tompkins, of the neuropsychiatry division.

* * *

New visiting regulations have been adopted by three Duluth hospitals, Dr. Mario Fischer, city health director in Duluth, has announced.

The regulations, which, Dr. Fischer said, are "in the interest of better health," have been approved by the St. Louis County Medical Society, and are in effect at St. Mary's, St. Luke's and Miller Memorial Hospitals.

Visiting hours both in wards and private rooms are now between 2:00 and 4:00 p.m. and 7:00 and 8:30 p.m. on week days, Sundays and holidays, with only two persons permitted to visit a patient at any one time. Children under fourteen years of age are not permitted to visit in the hospitals, and all persons under sixteen years of age are barred from the obstetric floor.

* * *

The Hunt Hospital, founded in Fairmont thirty-three years ago by the late Dr. F. N. Hunt and his son, Dr. R. C. Hunt, closed on July 15.

Since 1940 the hospital has been conducted by Dr. R. C. Hunt and his son, Dr. Robert S. Hunt, who are continuing to maintain offices in the building while using the Fairmont Community Hospital for patients needing hospital care.

In regard to the closing of the Hunt Hospital, Dr. R. C. Hunt said, "In view of conditions—which includes a shortage of nurses — we feel that the interests of the public will best be served if we centralize our efforts in one location, where the greatest possible use of personnel and equipment will be realized."

* * *

At a round-table conference at Fort Snelling in July, leading medical men from six states met with representatives of the Veterans Administration and the Minnesota American Legion to analyze medicine in relation to the veteran.

Conclusions of the group were that "veterans' medicine" had advanced tremendously in the past year, that the future looked "very bright," but that VA hospitals were badly overcrowded and new buildings and facilities were needed.

Dr. Charles W. Mayo, member of the Medical Advisory Committee of the VA, said that the high standards originally set for the Upper Midwest area are now being approached generally in the nation. Dr. Harold S. Diehl, dean of Medical Sciences at the University of Minnesota and chairman of a committee that aids in selection of medical personnel for the VA, pointed out that physicians of high ability are now working with the VA whereas a year ago they tended to "shy away."

The meeting was held to bring a better understanding between the Veterans Administration and veterans' organizations.

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Communication

September 2, 1947

To the Editor:

Those of us who were once accustomed to appreciate and marvel at the remarkable clinical acumen displayed by the clinician of two or three decades ago at ward rounds and at autopsy table, will heartily agree with the sentiment expressed in the first two paragraphs of the editorial entitled "Laboratory Abuse" which appeared in the July issue of Minnesota Medicine. We must combat the strong tendency toward the dependence which is more and more being placed on laboratory and x-ray findings in the care of the patient, at the expense of clinical observation and judgment, which the young physician should learn to acquire.

I am not, however, in accord with the statements made in the third paragraph, wherein the writer, referring to the uncontrolled use of laboratory facilities, declares that "one does decry their unstinted use, particularly in the private hospital and office" and then, commenting on the need for reducing laboratory expense by some form of a cushion, asserts that "a practical example of this type of cushion is the State Board of Health Laboratories."

Speaking only for the private hospital, it must be remembered that in most of them in Minnesota, the laboratory fees are charged by individual tests, and no tests are performed without the request from the attending physician, except for the obviously necessary minimum routine admission procedures and the histologic examination of surgically removed specimens. I find the average attending physician to be quite conservative about the use of the laboratory facilities, even in the best of the private hospitals, and on many occasions, the laboratory contributes its services free of charge in the study of unusual or difficult cases, for the sake of scientific interest and in order to relieve the financial burden on the patient. I do not believe that there exists, to any alarming degree, the laboratory abuse which the writer deplores, in the majority of the private hospitals. It is where the laboratory facilities are free and easily accessible and where the residents and interns are allowed to assume a greater degree of responsibilities in the diagnosis and treatment of the patients, as in the public and teaching hospitals (or perhaps, where a flat rate is charged for all laboratory tests) that the abuse is likely to exist.

The high cost of laboratory service is, therefore, attributable, not so much to the abuse, but largely to the high cost of maintenance; that is, the cost of the equipment and the salaries of the technicians. The latter are no longer the mechanical robots of two decades ago, but college-trained experts who are especially trained in medical technology, bio-chemistry, bacteriology, hematology, et cetera, who are equipped to meet the demands of modern medical diagnosis. Their salaries must be adequate enough to justify their professional training. This trend, of course, is not peculiar to the laboratory workers, but shared alike in all phases of medical practice, in nursing, in anesthesia, in x-ray service, as well as in all other specialties as, indeed, in all present-day human endeavors.

Therefore, it is difficult to comprehend how a physician would single out the practice of clinical pathology and have the State Board of Health Laboratories perform clinical laboratory procedures, other than those directly related to the control of communicable diseases and public health, in order to bring down the cost of laboratory service. Since the performance of laboratory procedures is primarily a part of the function of the clinical pathologist who is a practicing physician, the delegation of this function to the State would be to allow the state to compete with the licensed physician. If this were allowed to happen, even in the name of economy, would it not be logical to suppose that any part of any specialty of medicine might be taken over by the State in the name of economy or public health? Could one not imagine the State taking over a part, if not all, of the nursing service in order to "cushion" the high cost of medical care?. Why should not the State go into obstetric practice and infant care in competition with the physician? To advocate that the State Board of Health Laboratories might extend its laboratory service to include routine diagnostic procedures (including the Rh determination and tissue diagnosis) would seem as illogical as to sanction a proposition that the State might "cushion" or share the expense of the practice by members of any other specialties of medicine.

Diagnosis by laboratory methods is a sphere of clinical pathology. A clinical pathologist would view with concern any suggestion that the State Board of Health Laboratories might "cushion" or share the expense of any laboratory procedures (other than those dealing with the control of communicable diseases and public health) not only for the sake of his own practice, but for the future of his fellow practitioners, for it may represent another step toward a deeper and firmer control by the State upon the practice of medicine in general.

Kano Ikeda, M.D.

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BOOK REVIEWS

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MILK AND FOOD SANITATION PRACTICE. H. S. Adams, B.Sc., Chief, Bureau of Environmental Hygiene, Division of Public Health, Minneapolis, and Lecturer of Public Health, University of Minnesota. 311 pages. Illus. Price $3.25. New York: The Commonwealth Fund, 1947.

This book is a practical text covering in detail the field of milk and food sanitation. The author states in part, "It is intended that it should be useful in orienting the public health student who plans to work in the field of environmental sanitation, and that it should serve as a guide for health officers, public health engineers, and sanitarians whose work in a local health department involves routine but important duties in the sanitary supervision of milk and food supplies. The book endeavors to present essential and fundamental principles of milk and food control, but it does not attempt to discuss theory exhaustively."

The first part of the book is devoted to milk sanitation. After pointing out that the cash income derived from the sale of milk is larger than that of any other farm commodity including grain crops, and represents twice the cash return from cotton, the author systematically describes the steps involved in planning and administering a milk control program. Essentials of sanitary milk production, undesirable flavors in milk, pasteurization, laboratory procedures, and the sanitary control of frozen desserts are discussed in a way to be of practical use to milk sanitarians. A bibliography on milk provides an extremely valuable source of supplementary reference material.

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The second part of the book is concerned with the food control problem, essentials of food establishment sanitation, and instruction and training of food handlers. Practical helps for the food sanitarian include such items as a floor plan typifying many desirable features in a medium-sized restaurant; basic features of various kinds of dish washing machines; recommended retail storage temperatures for various fresh fruits, fresh vegetables, meats, and other products; and sample review questions for a health department food handlers' school. A bibliography on food here also supplies vital reference sources.

An unusual feature of this book is provided by the appendix, in which there appears a well-organized and well-presented series of sections which milk and food sanitarians may use much as they would a field handbook. The supplementary source material refers to such sources as publications of various kinds, and organizations and commercial institutions interested or engaged in the milk and food industry. Field equipment for the food sanitarian is described in detail. Analytical procedures for detection of cyanide in metal polish, sulphites in meat products, and arsenic spray residue are typical of the specific testing procedures outlined. A suggested course of instruction for food handlers is presented and might well be studied by all health departments contemplating or engaged in this vital practice.

This worthwhile book, which certainly cannot fail to be of value to both student and sanitarian alike, ends with an index so organized as to fulfill admirably its intended purpose.

Earl H. Rubble, M.S.
Public Health Engineer
Duluth, Minnesota

THE PHARMACOPOEIA OF THE UNITED STATES OF AMERICA NO. XIII. Easton, Pennsylvania: Mack Printing Company, 1947. Price $8.00.

The thirteenth United States Pharmacopoeia became official April 1, 1947. Sheet supplements which may appear from time to time may be obtained from the U.S.P.

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headquarters, 4338 Kingsessing Avenue, Philadelphia 43, Pennsylvania. The United States Pharmacopoeia XII became official in 1942, but so rapid was the development in drugs during the war and so many were the supplements needed that another revision was deemed advisable.

For the first time the titles are arranged alphabetically according to their English titles instead of Latin, and this facilitates reference.

Revision XIII, as well as recent revisions, represents an enormous amount of investigation and compilation which would have been impossible to handle with present resources had it not been for the gratuitous assistance given by many groups and individuals. Through the cooperation of the chairman of the National Formulary Committee of Revision, it has been possible in these two official books of standards to develop uniform methods in related fields.

Each Pharmacopoeia is revised by a general Committee on Revision, elected at each decennial meeting by the members of the U.S.P. convention, made up of representatives of medical and pharmacal colleges, state and national medical, dental, chemical, drug and veterinary associations, Army, Navy, and U. S. Public Health Service, and a number of other organizations too numerous to mention.

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HOSPITAL CARE IN THE UNITED STATES. American Hospital Association, 18 East Division Street, Chicago 10, Illinois. Price $4.50.

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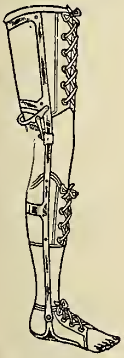

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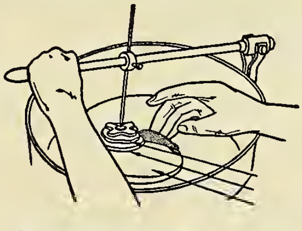

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 **October, 1947** **No. 10**

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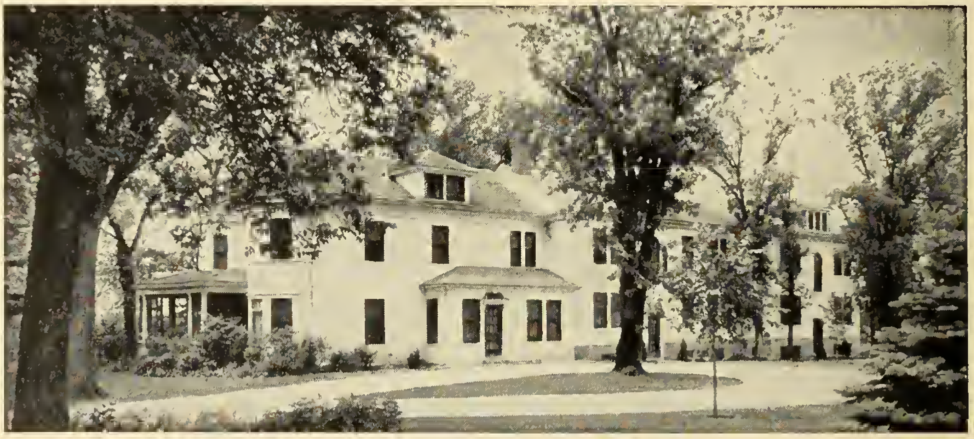

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1. Lennox, W. G. (1947), Tridione in the Treatment of Epilepsy, J. Amer. Med. Assn., 134:138, May 10. 2. DeJong, R. N. (1946), Further Observations on the Use of Tridione in the Control of Psychomotor Attacks, Am. J. Psychiat., 103:162, Sept.

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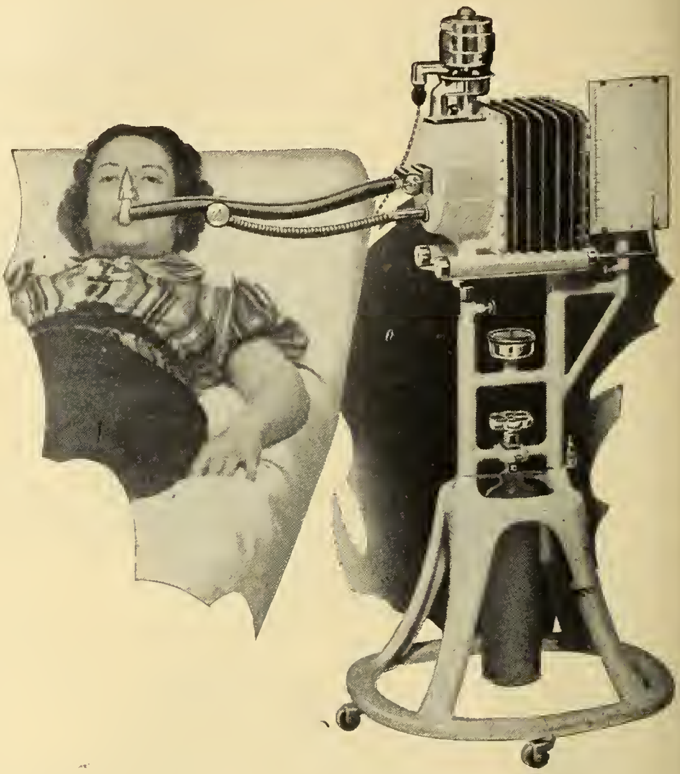

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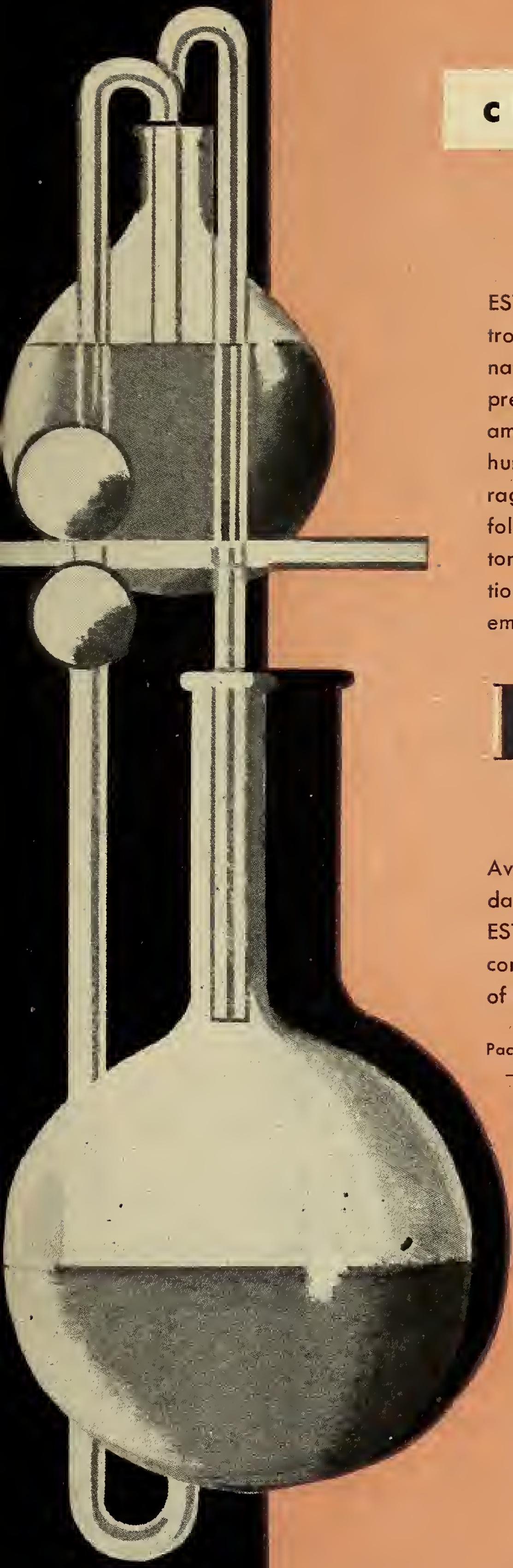

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1. Bickers, W.: Am. J. Obst. & Gynec. 51:100, 1946.
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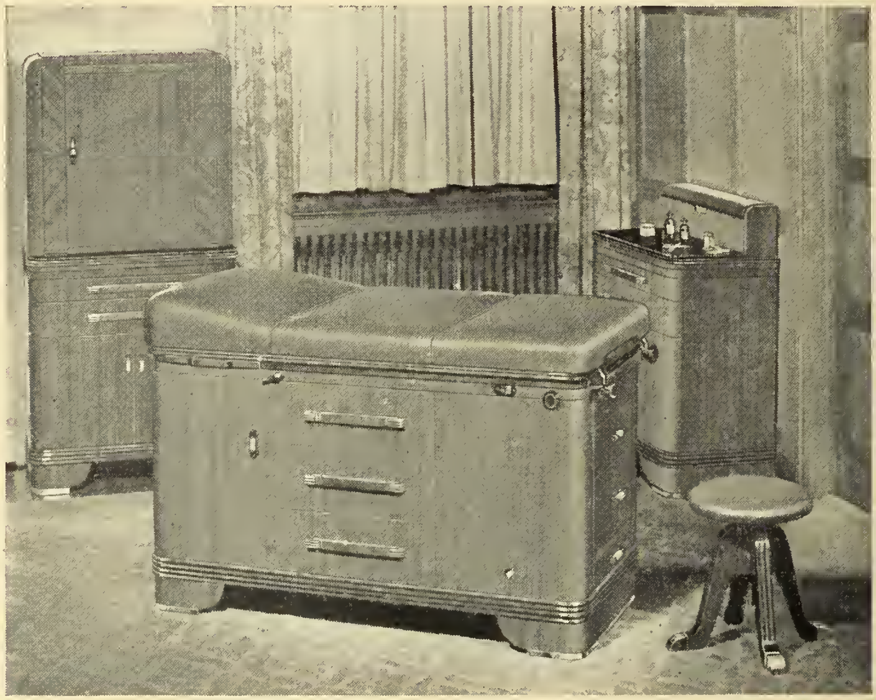

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*Vital Statistics—Special Reports: Vol. 25, No. 12, National Office of Vital Statistics, Washington, D. C. (Oct. 15) 1946, p. 206.

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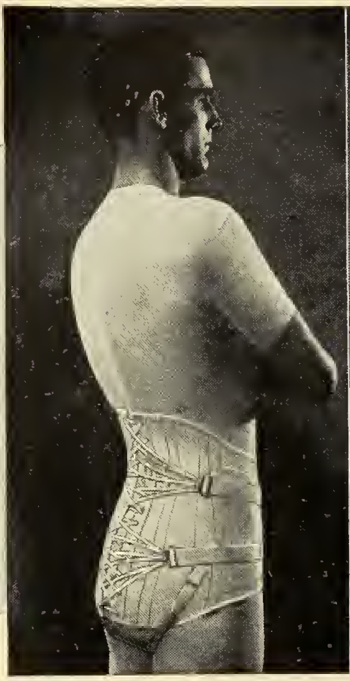
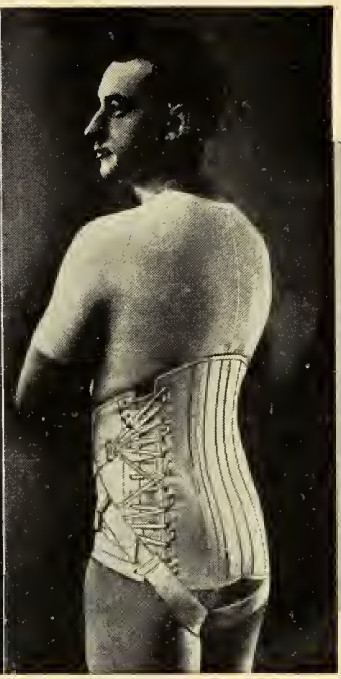


FIGURE 1 — Patient — thin type of build with beginning faulty body mechanics. The Camp adjustment provides a more stable pelvis, allowing patient to "draw in" the abdominal muscles thus gradually acquiring a gentle lumbar curve.



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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 October, 1947 No. 10

A PHYSIOLOGIC APPROACH TO CARDIOVASCULAR ROENTGENOLOGY

MARCY L. SUSSMAN, M.D.
New York, New York

MY subject concerns the possibility of and the need for the roentgen study of the heart to be made in terms of pathologic physiology. I do not mean to deprecate the importance of anatomic diagnosis but rather to emphasize that since pathologic anatomy is only an end result of altered dynamics, much of our attention should be focussed on the disturbed physiology.

The function of the heart is to propel sufficient adequately oxygenated blood to the tissues and to handle it efficiently on its return. We are concerned therefore in the efficiency and adaptability of the heart in maintaining a proper pressure head and volume output. Pressure and volume are related through Starling's law[15] which states that, within certain limits, the volume output per beat is directly related to the diastolic size of the ventricle. To put it another way, the greater the initial pressure, which is a function of the length of the muscle fiber, the greater the pressure developed and therefore the larger the volume of blood ejected. This law comes into play when the venous return is augmented, when the ventricle is unable to empty as the result of increased pressure in its outflow artery, as well as when the ability of the myocardium to contract is impaired. Long continuance of an augmented contraction based on increased initial length leads to hypertrophy, which still permits efficient contraction until the elastic limits of the fibers are overstrained. Then the diastolic pressure begins to rise and, with further increments to diastolic filling, the output falls.

The atria probably do not follow this pattern. If, as is likely, they act like large veins[16] there will be a pressure level below that associated with clinical failure, at which a slight increase in pressure will cause a marked increase in volume.

The important factors in cardiac dynamics, therefore, are the pressures in the individual cardiac chambers, including details of their change during the cardiac cycle, the changes in the volumes of these chambers, and their output. As Cournand and his colleagues have shown,[7] pressures can be recorded in the right heart and femoral artery in humans, but this technique is not applicable to all patients. The ordinary x-ray examination tells us only about the over-all size of the heart, and this not too accurately because the upper and lower borders must be guessed and because the geometric shape varies unpredictably in different physiologic and pathologic conditions. Furthermore, the volume of individual chambers is not given quantitatively except in a condition like mitral stenosis where the left auricle is unusually dense. The only method which regularly demonstrates individual chambers is angiocardiography,[20] but this also is a procedure which cannot be applied universally.

Roentgenkymography, or more recently electrokymography, by recording cardiac pulsations affords modified data concerning volume change and, indirectly, pressure change.[11,18] This method is easily applied and, therefore, will be considered first, using the effects of respiration on cardiac dynamics as an illustration.

The pressure gradient between peripheral and central veins is an important factor in right

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The Russell D. Carman Memorial Lecture presented at the annual meeting of the Minnesota State Medical Assocition, Duluth, Minnesota, June 30, 1947.

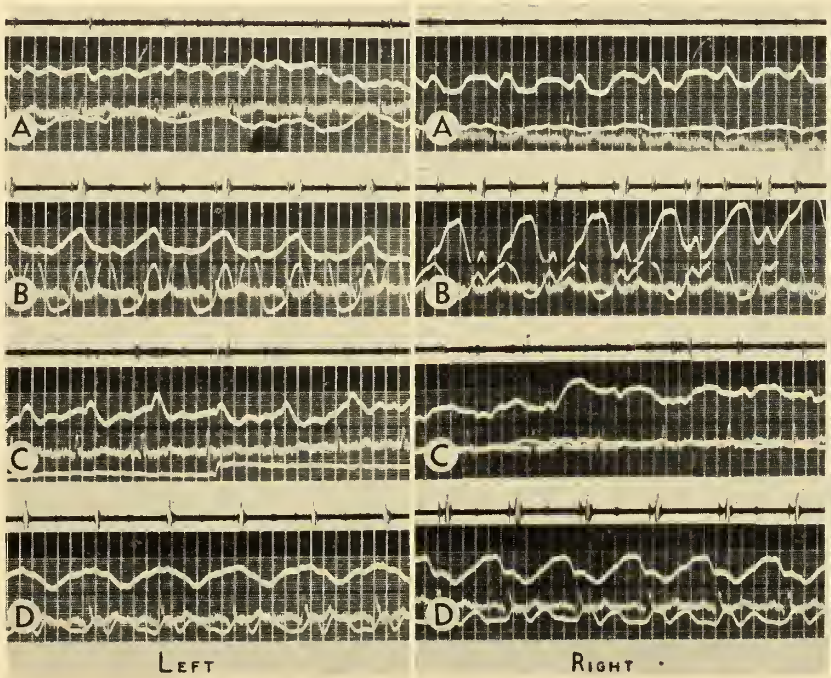

Fig. 1. Electrokymographic recordings of the pulsations of the left and right heart borders (postero-anterior view) in a normal hypersthenic man. Each record consists, from above down, of simultaneously recorded heart sounds, electrokymogram, electrocardiogram (distorted by 60-cycle interference) and apex beat. Camera speed, 50 cm. (A) Deep inspiration. (B) Deep expiration. (C) Valsalva experiment. (D) Mueller experiment.

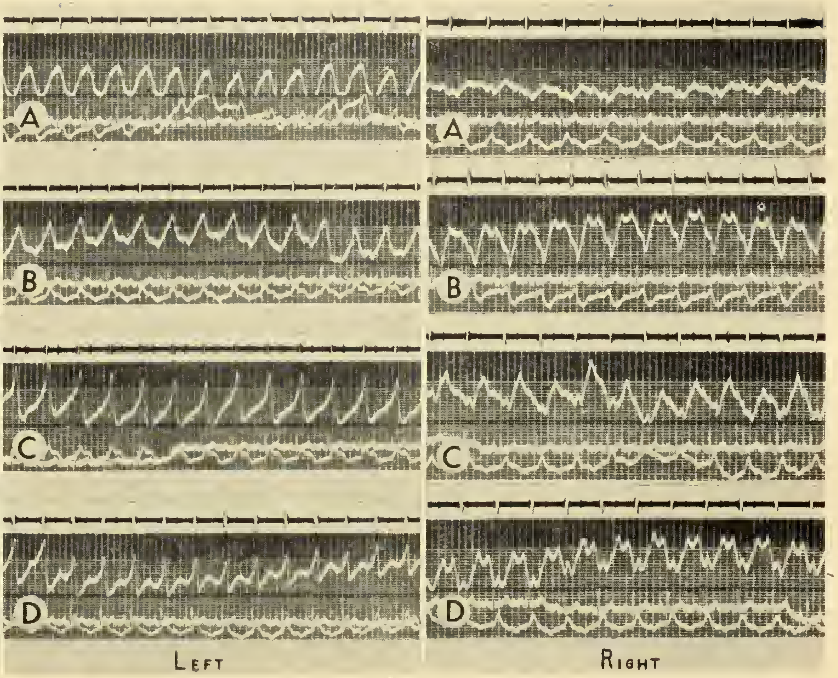

Fig. 2. Electrokymographic recordings of the pulsations of the left and right heart borders (postero-anterior) in a hyperthyroid woman. Each record consists, from above down, of simultaneously recorded heart sounds, electrokymograph, electrocardiogram, apex beat. Camera speed, 25 cm. (A) Deep inspiration. (B) Deep expiration. (C) Valsalva. (D) Mueller.

atrial filling and, therefore, in the dynamics of the rest of the circulation. Since this pressure gradient can be affected by ordinary and exaggerated respiration, we have a simple method by which to change these conditions. For example, roentgenograms made during Valsalva and Mueller experiments may show a change of 20 per cent or more in the volume of the heart.

It has been shown by direct inspection of the heart in dogs, that the decrease in intrathoracic pressure that occurs with deep inspiration results in augmented right atrial filling,[2] and in right ventricular dilatation.[17] According to Starling's law, this produces an increase in right ventricular output. Lauson et al,[12] from intracardiac pressure recordings, made similar deductions in the human. They showed also that for a few beats there is a decrease in the left ventricular output in inspiration and an increase during expiration. However, they emphasize that this basic pattern can be varied by changes in the following: depth of respiration, relative duration of inspiration and expiration, respiratory rate, kind of respiration (abdominal or thoracic), pulmonary vascular capacity (as the result of disease or therapy), distensibility of the ventricles in diastole (as in pericardial disease), and venous return as in peripheral or central failure. While, as I noted, it is difficult to study the absolute volumes of the cardiac chambers in the human, the timing and the speed of volume change can be recorded during the cardiac cycle from the heart border. Morelli[14] carefully investigated this subject in 1939 using a concentric kymogram. The electrokymogram, however, permits a rather more precise analysis, particularly because other circulatory functions can be simultaneously recorded. At present we record heart sounds, electrocardiogram, electrokymogram and either the carotid or venous pulse, or the apex beat.

The electrokymogram, as described by Chamberlain and his group,[11] records the movement of the cardiac contour through a photocell. As the contour moves to and fro in front of the cell, the amount of light from the fluorescent screen and the current from the photocell vary proportionally. The current is amplified and activates a recording galvanometer. The final tracing is much like a pulse tracing. As the right or the left heart border moves towards the midline of the chest a downstroke is recorded. Similarly, movement away from the midline is recorded as an upstroke. Therefore, when systole occurs, the left border contracts towards the midline, more fluorescent light enters the photocell, and a downstroke is recorded.

The timing of the events of the cardiac cycle is obtained from one of the other recorded functions since these have been well known to physiologists and cardiologists for many years. The timing of systole can be taken from the first sound or from the carotid pulse. The preliminary vibrations of the first sound correspond to atrial systole; the first large component of the sound corresponds to isometric contraction; the second large component to ejection. In the case of the carotid pulse, a slight presystolic peak may be seen corresponding to atrial systole. The acute rise of the anacrotic limb corresponds to ventricular ejection. The semilunar valves close at the time of the second sound and the dicrotic notch of the carotid pulse. When the apex beat is satisfactorily recorded, or more regularly from the venous pulse, the rapid inflow phase of diastole is easily distinguished.

In general, the time relations of mechanical and electrical activity of the heart are not constantly correlated. However, when other activities are not well recorded, and this occurs frequently in experiments with respiration, the electrocardiogram may be the only available frame of reference.

The electrokymogram is analyzed therefore by determining when certain phases of the cardiac cycle have occurred, and deciding from the movement of the cardiac contour what is happening to the chamber that forms the contour at the point being investigated.

Case 1 was a normal hypersthenic man of fifty years. The left ventricular contraction is larger in expiration than in inspiration (Fig. 1). Exaggerated respiratory motions demonstrate profound alterations in ventricular ejection and filling. In the Valsalva experiment, which is forced expiration against a closed glottis, systolic contraction is much more rapid than in expiration. Diastolic expansion is slow and steady until presystole, when there is a sudden sharp filling. In the Mueller experiment (forced inspiration against a closed glottis) systolic contraction is very slow, and diastolic filling, after a fairly rapid start, progresses slowly to its presystolic maximum.

Lauson et al[12] made intracardiac pressure studies during the Valsalva and Mueller experiments. Their evidence suggests that the strong compression of the thoracic contents produced during the Valsalva impedes venous return and, as a consequence, the right ventricular stroke volume decreases. After a short delay, the left ventricle follows suit. This will explain the slow diastolic filling of the left ventricle which is noted in Figure 1. The rapid systolic contraction is perhaps accounted for by a smaller systolic residue in the ventricle or by the lower pressure outside of the thorax than within it.

The Mueller experiment produces a marked fall in the intrathoracic pressure. Lauson et al[12] found here that there was a sharp drop in right atrial and right ventricular pressures. However, the net right ventricular pressure was increased, slowly returning to normal as the effort continued. This was taken to indicate increased output of the right ventricle and, therefore, after a few beats, of the left. Since the right atrial pressure in relation to the extrathoracic veins falls during the Mueller experiment, we can account for the steady diastolic filling of the left ventricle by this increased pressure gradient. The slow ventricular contraction on the left side is more difficult to understand unless there is a larger systolic residue and therefore a greater initial pressure. Perhaps also there are changes in the activity of the vasomotor centers during this experiment which alter the systolic pressure and secondarily the ventricular pressure.

Recording of the right heart border during the Mueller experiment shows a very rapid filling of the atrium during ventricular systole (Fig. 1).

The influence of heart rate, and therefore of the duration of the cardiac cycle, was studied in a patient with hyperthyroidism and a heart rate of 120 beats per minute. Intracardiac pressure recordings,[12] suggest that the duration of diastole may be of some importance in determining the mode of filling of the left heart. In our present case (Fig. 2), diastole was shortened to 0.30 seconds. During the Mueller experiment, the right atrial filling occurred rapidly and steadily from shortly after the onset of ventricular systole until the atrioventricular valves opened. Atrial systole is well defined; however, during the Valsalva when the right heart pressure is low, atrial systole is barely recorded. In both experiments, nevertheless, as well as in deep expiration, atrial movements are of large amplitude, which is probably to be related to the shortened diastole.

The contractions of the left ventricle are much like those in Case 1. However, rapid systolic ejection in both Valsalva and Mueller experiments is noted. In all likelihood a large systolic residue cannot accumulate in the ventricle during the Mueller experiment in this case because of the rapid heart rate. The rather remarkable difference in the shape of the ejection curve under these conditions is of great interest. I suggest that the apparent expansion of the ventricle in late systole during the Mueller might be due to the decreased pressure in the intrathoracic vascular structures as compared with the arteries outside of the thorax, since, while the semilunar valves are open, they are in free communication with the aorta and left ventricle. However, such explanations are mere speculations until, as we intend, simultaneous pressure recordings are made. I regret that space does not permit an elaboration of the clinical use of this technique. For simplicity, I have omitted from discussion the effect of the wringing motion of the heart during contraction, the side-to-side motion and the pull of the base towards the apex.

I shall pass on now to another interesting type of problem. After an arteriovenous aneurysm has been corrected or an acute anemia treated, the heart rapidly becomes smaller. This difference in size cannot be accounted for by a change in the stroke output alone. Fahr and Buehler computed[9] from observations on a heart-lung preparation that there would be an increase of about 125 c.c. in the diastolic volume of a normal human heart (assumed 600 c.c.) when the stroke output was increased fourfold. This corresponded to an increase of 7 mm. in the transverse diameter, whereas I have shown you differences of at least 11 mm. in one instance and 24 mm. in the other, in diseases in which the stroke output was at most doubled.

To explain this discrepancy, Nylin[13] postulated a change in the systolic residue in the heart. Cournand[5] showed that normally there is a systolic residue in the left ventricle through pressure recordings made during an extrasystole. These showed that although contraction occurred before filling could have taken place from the atrium, there was an ejection of blood from the left ventricle. Angiocardiography shows clearly that there is residual diodrast in the right ventricle at the end of systole and a smaller amount ordinarily in the left. This can be seen both from the exposures made at the end of systole (Fig. 3) and from a motion picture following the course of diodrast through the heart.* Chavez et al[3] recently agreed that the right ventricle does not empty completely in systole. They show films suggesting that the left does, but I am inclined to attribute this to a difference in technique, such as an unintended Valsalva experiment.

A discussion of systolic residues immediately leads us back to the problem of pressures, the importance of which I have repeatedly emphasized. Pressure recordings can be made in the right auricle, right ventricle and pulmonary artery as well as simultaneously in the femoral artery. The catheter is passed under fluoroscopic control by the roentgenologist. Pressure recordings are made and blood samples taken for oxygen content analysis at various points in each chamber. The oxygen content, along with the oxygen consumption, permits a calculation of the average stoke output.

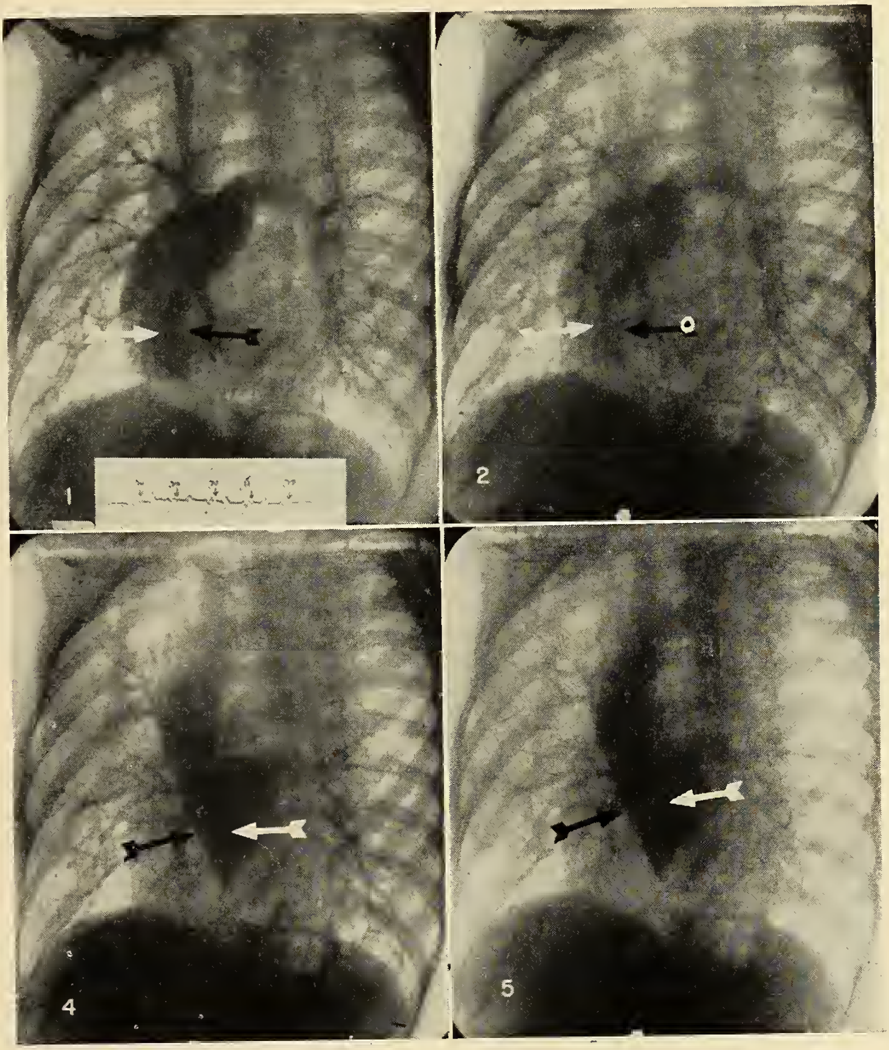

Fig. 3. Systolic residue. No. 1 and No. 2 show the residual diodrast in the right ventricle at the end of systole; No. 4 and No. 5 show the left ventricular residue. The exposures were controlled through an electrocardiographic lead (illustrated in No. 1).

When pressure determinations can be correlated with volume measurements, a maximum of information is available. For this reason, and also because of the anatomic data which is made available, angiocardiography also is employed. In the following cases, therefore, the results of such a correlation are presented. However, since we have only recently begun to catheterize the heart, while we have performed over one thousand angiocardiographies during the past few years, I have not hesitated to draw freely from the literature for the pressure data.

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*The motion picture mentioned was shown after the presentation of this paper at the state meeting.

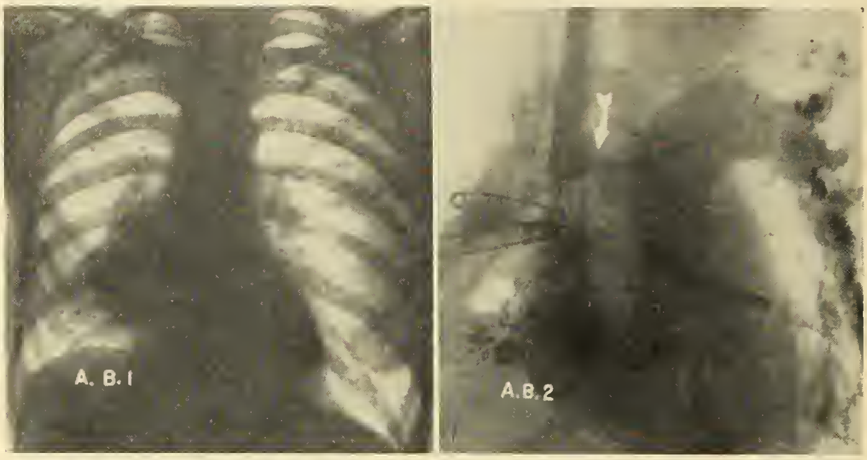

Fig. 4. (*Left*) Carcinoma of the right lower lobe bronchus (AB1). (*Right*) Angiocardiogram after right pneumonectomy. Arrow points to stump of right pulmonary artery. The left pulmonary artery and its branches are not significantly dilated.

Postpneumonectomy

The capacity of the pulmonary vascular bed is great. Removal of one lung so that the entire blood flow is through the remaining lung has very little effect upon right ventricular pressure because there is no change in vascular resistance. Cournand[6] also found the blood flow normal. The systolic pressure in the right ventricle was slightly elevated in one of his cases where there was a coincident chronic emphysema. The overall size of the heart remains normal, and the right ventricle, by angiocardiography, is normal in size (Fig. 4). The pulmonary artery, the remaining main branch and its smaller branches are not enlarged, the preservation of normal pressure-flow relations probably being maintained by an increase in the number and, to a slight extent, the size of the capillaries in the remaining lung.

Patent Ductus Arteriosus

In spite of the increased pulmonary flow in this condition, Dexter and Burwell[8] found the mean pressure in the pulmonary artery to be normal even when, in one case, the shunt through the ductus was estimated to be eight liters per minute. We have performed angiocardiography in about eighty cases of this condition, and the right ventricle regularly was normal in size; the serration of the trabeculae was unchanged, and the apex was pointed normally.[19] Sometimes the right ventricle appeared compressed by the large left ventricle (Fig. 5). However, it is anticipated that right ventricular dilatation and hypertrophy will be found if the pressure in the pulmonary artery rises, as was found in one case by Cournand (55/39 mm. mercury, as against a normal of 25/8).

Chronic Pulmonary Disease

In four cases of emphysema with a moderate increase in residual air, Cournand[6] found normal pressures in the right ventricle. In four cases with a larger residual air, the systolic pressure was elevated. In both of these situations, the heart was not definitely enlarged. However, when right heart failure was present, and this is defined by Cournand as occurring when there is diastolic as well as systolic hypertension, dilatation was found regularly. This experience is comparable to our findings with angiocardiography, with this addition. Angiocardiography has shown how difficult it is to determine the size of the right ventricle by ordinary x-ray means.[8] The first changes take place in the position and direction of the interventricular septum. The apex of the right ventricle is rounded instead of pointed. These changes are wholly undetectable by cardiac measurement or by inspection of the cardiac contours. When enlargement of the heart occurs, it is found to the left. However, the pulmonary artery is usually dilated, and this is demonstrated in the conventional roentgenogram.

When there is diastolic hypertension in the right ventricle, the mean right atrial pressure is elevated and this chamber enlarges. It is then that frank cardiac enlargement to the right is noted.

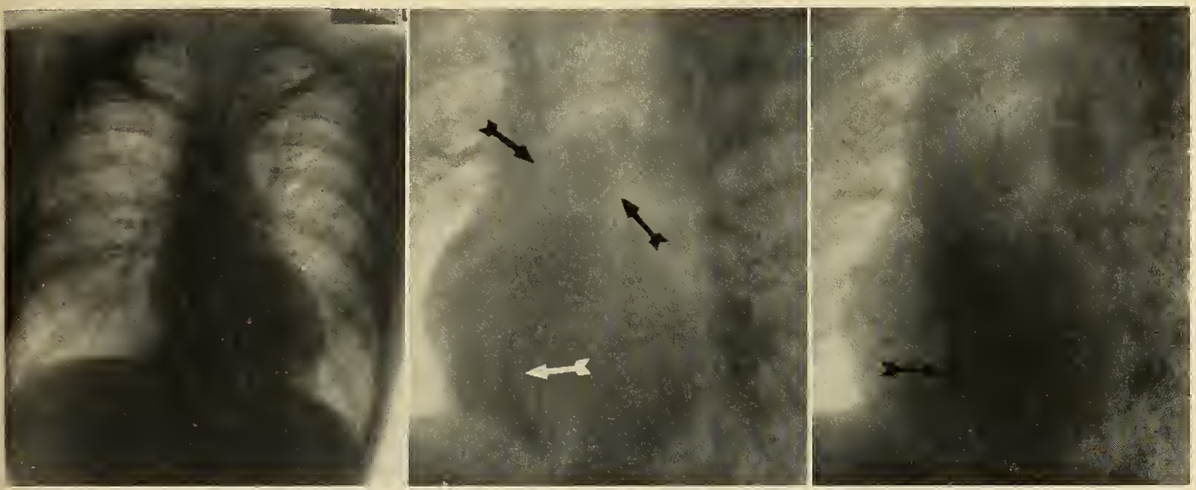

Fig. 5. Patent ductus arteriosus. Angiocardiograms made in left oblique position. (*Center*) White arrow points to left border of compressed right ventricle which is otherwise normal in size. Pulmonary artery (two black arrows) is not dilated. (*Right*) Black arrow indicates right border of very much dilated left ventricle.

Mitral Disease

We have been impressed with the finding, by angiocardiography, that the right ventricle is not grossly dilated in cases of mitral disease even when the heart is quite large.[10] The right ventricle on the other hand has been found displaced anteriorly, the pulmonary artery anteriorly and cephalad, by the large left auricle. The straightened, elongated middle left cardiac contour is due chiefly to the left auricle and not, as some have thought, to a dilated elongated pulmonary conus. It is apparent from angiocardiographic analysis, that it is very difficult or impossible to determine the size of the right ventricle in the usual case of mitral disease by ordinary roentgen means. The explanation for this is to be found in a report by Bloomfield et al.[1] In a case of rheumatic heart disease, they found a normal diastolic pressure in the right ventricle as long as the patient was not in failure. A systolic hypertension of 57 mm. mercury was present, but I have already indicated that significant ventricular dilatation does not take place until the diastolic pressure rises. The same patient when in failure revealed pressures of 103/29 in the right ventricle. It is these pressure changes that account for the marked change in the size of the heart that is found when a patient with mitral disease passes in and out of failure.

Eisenmenger Complex

This case is presented to demonstrate the integrated type of examination that can now be made. In this case, a girl of twenty-two, moderately cyanotic and with progressive impairment of cardiac reserve, the mean right ventricular pressure was 22 mm. mercury. The right atrial pressure also was substantially elevated. The pulmonary artery could not be catheterized but the pressure was undoubtedly high because pulsations were very active fluoroscopically and, when recorded, suggested pulmonary insufficiency. Angiocardiography showed considerable dilatation of the right auricle and right ventricle (Fig. 6). A shunt of diodrast from the right ventricle into the aorta clearly is present but most of the diodrast passed into the dilated pulmonary artery. This accounts for the high oxygen saturation of arterial blood that was found (82 per cent). In spite of moderate cyanosis and increasing impairment of cardiac reserve, this was not a case for the Blalock-Taussig operation.

Summary

I have very briefly touched on some of the phases of cardiac roentgenology which have interested me. I selected for presentation particularly those facets of cardiovascular physiology in which the roentgen ray can play an important role. It has been my intention to provoke consideration of these thoughts:

1. It is no longer necessary for roentgenology

to confine itself to a questionable static analysis of cardiac topography.

2. The roentgenologist has a tool which is particularly suited to a physiological approach to cardiac dynamics. However, his participation in a team will permit an integrated study which cannot be achieved by one individual alone.

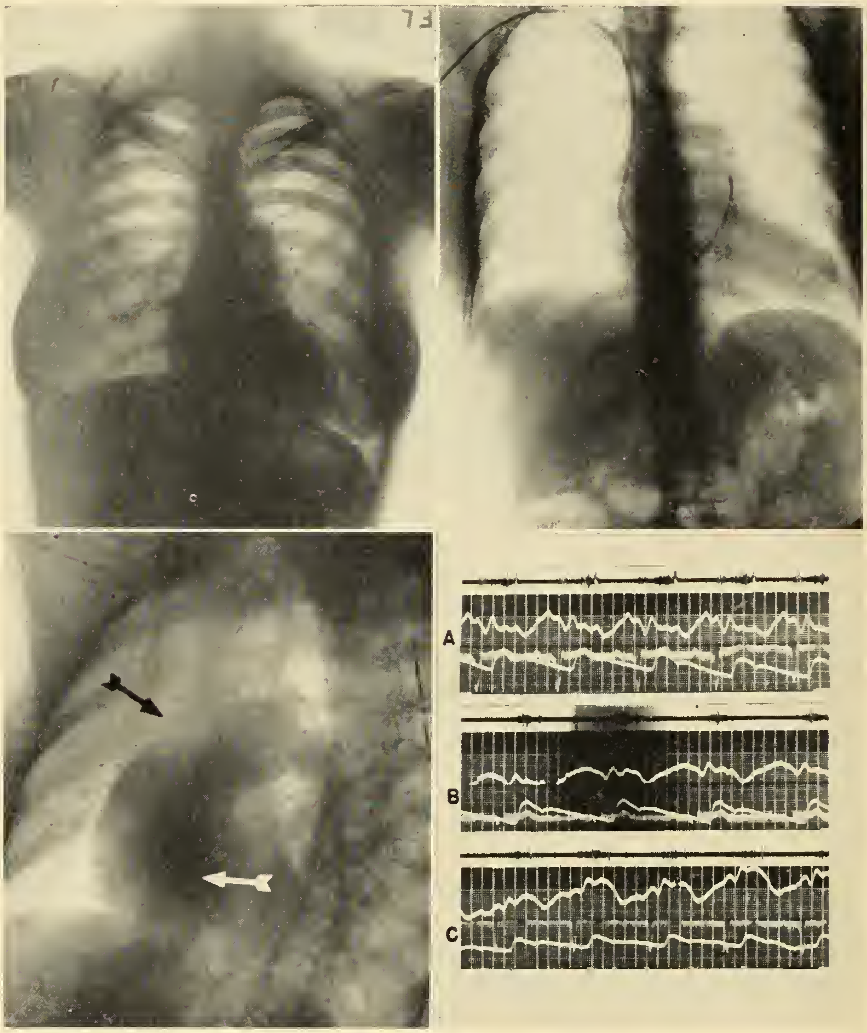

Fig. 6. Eisenmenger Complex. (*Above, left*) Conventional roentgenogram shows heart enlarged to the left, with the pulmonary artery segment convex. (*Above, right*) A catheter was passed into the right ventricle but could not be passed into the pulmonary artery. (*Below, left*) Angiocardiogram shows enlarged right ventricle (white arrow) and a dilated pulmonary artery. Diodrast enters the aorta from the right ventricle (black arrow). (*Below, right*) Electrokymogram of the left ventricular pulsations during a Valsalva experiment showed a lateral movement 0.06 seconds after the onset of ventricular ejection.

3. Newer techniques permit the study of the individual and his cardiac function. This is the fundamental development in clinical physiology. Reliance on prototypes in the postmortem room or on the experimental animal has become less necessary than heretofore.

In the preface to his book, Dr. Carmen said, "Opposing views have been considered with fairness and without conscious implication that the statements herein recorded should be considered final. Because of the lessons they may teach, mistakes have been recorded unsparingly, but these errors should not be regarded as reflecting on the efficiency of roentgen diagnosis in general."

Clearly if we follow Dr. Carman's precepts, knowledge must advance.

Credit is accorded to the teams with which I have worked in obtaining the data I have presented: Dr.

(Continued on Page 1081)

THE PLAN OF ACTION FOR FARM COMMUNITIES

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IN any discussion of rural health problems, one is reminded of the ancient recipe for rabbit stew, which began, "First you must catch the rabbit." In this case, the rabbit is public opinion, and perhaps the most important step in a series of steps looking toward improvement of rural health conditions is an awakening of the residents of a given community and an awareness of the problems that exist.

Next in order would be a meeting of interested people. Farm organizations, extension service, civic clubs, school authorities, church representatives and the nursing profession should meet with their county medical and dental societies and public health departments, and plan programs designed to answer three pressing questions: "How shall the sick be helped?" "How shall the doctor, dentist, nurse and hospital be paid?" and lastly, "What can we do in an educational campaign to institute preventive measures that will lead to better health?"

The result of such consultation should lead to a general survey of the rural community. The number of doctors and nurses, hospital facilities, condition of the roads, and the average income of the farm people to be served must be ascertained before intelligent planning can be assured.

When the exact report has been compiled, the entire community through its local leadership should be urged to focus general attention upon the findings. Through organization meetings, radio, press and pulpit, people can be informed of the true conditions and urged to assume responsibility in a program that will ultimately effect the much needed changes.

It is most likely that it will be found that there are existing agencies available that are not being used. Perhaps there is duplication of effort in some lines and co-ordination is needed. It is highly possible that a little well directed team work can bring Federal and State assistance of funds and personnel to the aid of local health workers, with remarkable results.

Communities should be made to see that they can well tax themselves to provide better facilities. A campaign of health education designed to explain and extend prepayment plans for medical care and hospital service will do much to disseminate authentic information on this comparatively new and less well-known method of paying some of the bills. Promising students should be assisted in preparation for medicine and nursing through scholarships. Farm organizations and the county medical societies may well plan workshops or discussion groups to carry forward and perfect the definite programs suggested by the surveys and "arousement" preliminaries.

America has her greatest stake in a healthful citizenry. Her economic and cultural advancement as well as her military strength for national defense are inextricably woven together. Today, we must meet this great challenge with the best we have and solve the problem by application of the time-honored American doctrines of self-help and individual responsibility. We can no longer say there is no problem and dismiss it with a shrug of indifference. If we do not present a positive approach and apply what we know and what we have, there are those among us who, restless and discontented, will seek to fasten upon us a system of regimentation and compulsion entirely foreign to American ideas and ideals. The stake is tremendous. We dare not fail.

Read at the Rural Health Conference at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

A SOUND PUBLIC HEALTH PROGRAM

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RURAL or farm community health is to be achieved only by interested active sharing in objectives and methods entered into heartily by the three parties primarily concerned. These are, in order of importance, the individuals or families of the community, the physicians and dentists in private practice, and the health department of the local government.

Health is a personal achievement, built upon good inheritance, upon an understanding of the laws of living matter, reproduction, nutrition and growth, that is, the principles of human biology, and such control of environment and human relationships in work and play as will reduce or avoid preventable disease.

Without the enlightened and eager self-interest of parents and children, employes, teachers, ministers, editors and all and sundry persons and households of the community in attaining a way of life that is consistent with good health, neither the professions nor officers of local government can create, maintain or improve the state of health of village, town or country.

There are no visible limits to the betterment of health, the enrichment of life, the completeness of the span of human survival, and the depth, breadth and happiness of life, if all we now know of the prevention of disease and the development and promotion of health at all ages is applied, with courage, determination and personal and social unselfishness by people, doctors and their local government.

Health is largely the result, the payoff, the reward, of a quality in persons and their way of life.

No one of the great accomplishments of the past hundred years, this recent century of sanitation, the golden period of the sciences and arts of human existence, would have been possible without the trust of people in their family physicians and the personal influence of these doctors of our nation in the households of our land. Their necessary role in carrying preventive medicine to every patient and family is ever more and more indispensable in the translation of the facts of laboratory and hospital, of medical school and research institution into practical application in homes, shops, farms and public policies.

Why then must we have the participation of local government when we admit the prior importance of the people themselves and their medical and dental advisers?

Because there are some services which can be offered at less expense and with more effect by government than if left to private initiative and individual conscience.

You ask me to describe a sound public health program with special respect to rural or farm community existence.

Let us at once define what we mean by public health services. These consist of the application of the sciences and arts of preventive medicine, by or with the consent of government, in the interest of the community, as distinct from medical services for the individual's personal benefit.

There are four recognized levels of government at which health services are conducted. The international, the national (federal or dominion), the state or province or department, and the local level, that is, the village, town, city, county or multiples of these within the frame of a local or district government.

We cannot separate ourselves from concern with the somewhat remote functions of the World Health Organization or with the duties of national health agencies, for without their protection, hazards from other lands and lack of central authority in commerce and transportation would certainly deprive us of much of our present health security. But they do not reach into our homes or provide persons to protect our water, milk and food supplies, or supervise the sanitation of our villages. At the state level we touch closely upon services that may be, and in Minnesota always have been, about as intimate and personal as are those of the local department of health. In fact, in most of the area of your state and for at least one-third of your population, the state department of health has been the only source of protective health services, outside of the four large cities.

Read at the Rural Health Conference at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

But be it always remembered that state, national and international health services and programs can be but partial and largely theoretical unless built upon a structure that brings basic essential health services to every household, through the agents of the public health professions serving each respective community, be it town, county, city or village.

Let us then picture for our immediate goal as a function of every local government, whether separately or in conjunction with adjacent communities within the county, the simplest, most elementary, economical but efficient services for health required to make use of the abundant facts of present day medical knowledge.

It is a privilege enjoyed under your laws for every unit of local government to establish a board and department of health. In all common sense this privilege should be seized upon as an obligation, a duty of every local jurisdiction of government that levies taxes and disposes of such revenue in the public interest. County and lesser units of local government in Minnesota have taken their responsibilities too lightly in this respect, and there are literally hundreds of local health departments unworthy of the name and but mere gestures, serving no useful purpose. It is inevitable that this should be so under the loose and inadequate provisions of state law which do not now facilitate the joint action of small communities and sparsely settled counties to combine for the common purpose of health departments.

I share with all physicians of your state, and with many other citizens of good will and public spirit, a deep chagrin and mortification that your recent legislature allowed a petty political obstruction to frustrate the evident demand of the people for an enabling act permitting the creation of city-county, county-wide and multi-county health departments for efficient public health service at the local level.

But to come back to the substance of the matter. Of what does a sound public health program consist? Certainly it does not include medical care of sickness. It does not invade the recognized field, the traditional and accepted sphere of private initiative and personal relation of family and family physician. A public health program must be conceived in view of four administrative principles. There must be authority under the law for the performance of certain functions; there must be responsibility vested in a professionally qualified medical officer of health appointed by elected officials of local jurisdiction; there must be tax funds authorized and appropriated to carry out the health services; and the health officer must be free to select and employ such professional, technical and assistant personnel within the specification of civil service requirements as may be necessary for the work to be undertaken.

Authority, responsibility, tax money, personnel—these must be assumed if we are to venture upon a service so vital, so indispensable to living and a high level of health.

The basic functions of the local health department are six in number, each long tested and each of proved worth, and each so related to the others as to make a consistent and efficient administrative whole. These six functions are:

1. The accounting for all births, deaths and notifiable diseases, occurring within the local jurisdiction: the vital statistics or human family bookkeeping. This requires verification of each record for completeness and accuracy, the tabulation, analysis, interpretation and publication of the facts to be used as a basis for education, for public policy, for health accounting to the local public.

2. Control of communicable diseases by the use of education, persuasion, and, if necessary, the authority for sanitary law. There is the provision of specific protective immunity to those not so served by the family physician, and of such treatment of infected persons as will shorten the period of communicability of a disease. These services, guided by epidemiological intelligence and resourcefulness, everywhere produce calculable and usually brilliant results.

3. Environmental sanitation including protection of water, milk, foods, and especially the guardianship of all employed persons against any health hazards of their occupation. The control of insects and animal pests capable of communicating or causing disease in humans is included under this part—the sanitary engineering control of man's environment on the material, as distinct from the social or physical, phases of his life. Housing occupancy, as distinct from housing construction, falls within the scope of sanitation also. The measure of success in this function of a local health department is, as is the case in many of the others, the amount of

educational persuasion, rather than the extent of police power or sanitary authority that is used to obtain compliance. The best health services are those that keep the big stick of authority hidden, while teaching has full play to obtain a willing and interested co-operation.

4. The public health laboratory is the servant of the sanitarian, the epidemiologist, the health educator, the health officer within the department of health, and, even more, the collaborator and assistant of the physician, the veterinarian, the dairyman, the food processor and purveyor. The laboratory gives exactness, promptness, decision and irrefutable proof of conditions in persons and in environments that hazard health.

These four functions carry on the earliest basic conceptions of public health service and are supported by long established legal sanctions, supported by the highest courts.

The next two functions involve only educational methods and express the most modern concepts of the role of civil government as the people's friend and counsellor, rather than their master.

5. Only since 1912 have local health departments had bureaus or divisions of maternity, infant and child hygiene, including concern with the health protection of school children. This function, perhaps, in its scope and bearing upon human happiness and survival is the most far-reaching and necessary of all the duties of a health department and might well be thought of as concerned with human reproduction, replacement, growth and development, the whole field of the succession of the generations, the quality and quantity of our offspring, with genetics and eugenics, with inheritance and the up-bringing of children within the family. From the pre-marital state of oncoming youth, through the period of the expectant mother, the dangerous days of early infancy, the delightful personality and exuberance of the runabout, the preschool child, and through the baffling years of adolescence, through high school and into college or employment, the health department stands as a sort of proxy parent to guide, guard and assist in the achievement of maturity with the least possible number of handicaps to the body, mind and spirit of the child. Truly the very principle of human biology, if it becomes part of the way of good life in home and community.

6. And then latest, as a member of the public health family, is the function of health information, instruction and education in all its infinite variety.

Health education is a life-long experience, a sort of biological philosophy, the very essence of common sense. It has always been a function of the family physician. It is the particular province of the visiting and public health nurse. It is a major concern of every member of every department of health from local to international. It is an art that carries the word of science.

No thought of force or compulsion, no threat of authority or law can be tolerated in the relationship between the mother with her children and the public health nurse who is the very embodiment of a traveling encyclopedia of hygiene. Whatever the information sought by the public or specially promoted by the health department in the public interest, the method must be that of the educator who speaks with authority in the field of human health.

These six, then, are the basic, minimum functions of a local health department: vital statistics; communicable disease control; environmental sanitation; public health laboratory; maternity, infant and child hygiene; health education.

If I did not believe each of these to be a proven need for my fellow citizens and a proper and authorized duty of local government to provide, I should not have come so far from my home by the sea to persuade you physicians and you parents of Minnesota to organize your professional and public influence and opinion to the effect that no village, town or county of your state lacks these. We have had these services in New York City since 1865.

Full-time, trained professional medical leadership for such health services is as essential as a lawyer on the bench, an engineer in charge of your highways, an educator at the head of your schools.

Part-time physicians, private practitioners, can no longer play safely the part of local health officers. They should not be asked to.

Of Minnesota's 2,714 counties and cities, villages and townships permitted to set up each a local health department, only 821 of the 1,881 townships had a health officer. Most of the local health officers of Minnesota are on a part-time or fee-for-service basis. Not more than one-fifth of the local health departments in Minnesota, of which there are some 1,635, even report the pay of the health officer.

This is an inexcusably loose and inadequate provision for local health service, for which the remedy was sought at the last legislature.

The chief errors which have developed unnoticed over the recent decades are:

1. Local governmental jurisdictions are too small to support a competent staff to carry out the necessary functions of a local health department.
2. Appointment as health officers of part-time practitioners of medicine and surgery, whose time and interest are fully engaged in caring for the sick.
3. A small penuriousness of local government, which in the main makes wholly insufficient appropriations for human life-saving.

The necessary steps to make Minnesota lead the states in eradication of tuberculosis and syphilis and maintain its distinction in local health worthy of its great university schools of medicine and public health and of its distinguished state health department are as follows:

1. Secure passage of the enabling act for creation of consolidated local health units of suitable size.
2. Impress elected officers of local government with their duty to appropriate sufficient tax funds to support at least the minimum basic local health services under trained medical direction.
3. Make certain that no less than one public health nurse is employed for each 5,000 population for administrative and educational services. One for each 2,500 of population will be needed if they are to be required to give bedside care of the sick in the home.
4. Give the local health officer authority to employ other professional and technical personnel as the population may require.

You will have noted, and perhaps with surprise and disappointment, that I have made no reference to the relation of the local health officer to the administration of hospital, outpatient or home medical care services for the sick. Your laws may put the burden upon him, but I assure you that the program of public health I have outlined will require all the ability and time of a trained health officer and that community health will suffer if his talents are devoted to management of medical care programs for the sick.

It is proper to have the state department of health charged with its present and expanding functions in the interest of more and better hospital care, but care of the sick is not a proper function of the local health officer.

Every local jurisdiction of size to justify a full-time health department should have a professional and citizens' health council to serve as a forum, a sort of public conscience and planning body to back up the public health program. One further omission I have been guilty of intentionally. I have not advised that in the establishment of local health units and implementing their half-dozen essential functions there be undertaken clinic services for the aged, for heart disease, for diabetics, for the mentally ill, for multiple sclerosis, for cerebral palsy, for epilepsy, for Hodgkins' disease, for cancer, or for arteriosclerotic and hypertensive patients.

Only so far as the state of medical knowledge offers any sound facts which can be safely and honestly passed on to the general public through educational publicity, can local health departments participate in the prevention of these many serious human ills.

Medical institutions for diagnosis and treatment and research establishments to study origins and causes of chronic, long-time disabilities have the present responsibility with respect to these diseases as causes of individual sickness.

We are deeply ignorant of facts upon which programs of prevention can be based.

Let us, through our health departments, persuade people to obtain competent medical and surgical advice, as the best means of safeguarding their health by periodic health examinations. If they are, in fact, unable to meet the cost of such examination, it is certain that medical institutions and organizations will find ways of providing it.

The health department is not the agent of government or the community which should be charged with establishing clinical facilities for diagnosis and treatment of the sick, unless the sickness of the individual threatens communication to others.

The public health council, the local medical society, the health officer and his staff should be the agencies to discover and correct preventable causes of ill health and create the public spirit of co-operation among all elements of the population

(Continued on Page 1070)

THE HEALTH PROGRAM IN RURAL SCHOOLS

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IT is axiomatic that in a democracy such as ours the rural school child *should* enjoy equal opportunities with the urban school child so far as the protection and improvement of his health is concerned. When we look at the record, however, we find this is not the case. Health examinations of rural school children are too often omitted or only hurriedly done; arrangements for following up remediable defects and utilizing all community resources to bring about correction are too often lacking; heating, lighting, ventilating and cleaning facilities in the rural school are too often inadequate, and planned and progressive health teaching too rare.

Correlated with these inadequacies (but probably not the direct result of them), we find that though rural and urban children start life with about the same number of remediable physical defects, urban children manage to get many more of their defects remedied during their school life than do rural children. We also find that the health habits of rural children, particularly in respect to matters of diet, dental care, and communicable disease control, are generally inferior to those of urban children.

While fresh air, sunshine and physical activity are health boons almost automatically afforded rural children, they do not of themselves guarantee a high level of health or physical fitness, nor should their presence be accepted as a reason for excusing an inadequate health program in the rural home, school, or community. If a good home-school health program can be added to what rural children already have in the way of health-promoting factors, our rural population should make rapid strides in improving efficiency, productivity and contentment.

The Basic Problem

The basic problem is created by the wide dispersal of rural children in the thousands of one-room schools. Consolidation of these one-room schools would of course simplify this problem in many respects, but such consolidation is a long and often painful procedure, and the successful efforts of Grout, Lamkin, Greenleaf, Drenckhahn, VanSlyke and many others are proof of the fact that much can be done to improve the health programs in our rural schools without waiting for consolidation.

With perhaps several hundred one-room rural schools scattered through a typical county it is easy to see that the county superintendent of schools will have very limited opportunity to provide guidance and supervision to the individual teacher attempting to carry on an effective school health program. It is just as obvious that the rural teacher with pupils in perhaps all eight grades, and with the whole category of responsibilities extending from planning the school day to supervising the recess period, is not going to have very much time to study the health needs of her pupils and of the community or to collect interesting new health-teaching materials or to make home visits to discuss pupil health problems with the parents.

Some Needed Assistance

If adequate school health programs are to be provided county wide, then it is apparent that the overburdened teachers and county superintendents must be given assistance. That assistance may well consist first of a well trained health education supervisor or health co-ordinator. This worker will bring new teaching materials to the rural teachers, work with them to develop teaching units that will be suited to the needs of the children and adaptable to the limited resources of the one-room school, and give needed assistance in the maintenance of a hygienic and sanitary school room.

Another form of assistance which should be made immediately available to this overworked team of county superintendent and rural teacher is the limited service of a physician and nurse. It is difficult enough for the mother of a family to be responsible for the health of her small children in the isolation of a farm home. She usually has the father with whom to share the responsibility and she knows that in real difficulty she can usually find her family doctor at the other

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Read at the Rural Health Conference at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

end of the telephone line. But to ask the teacher to be responsible for the health of twenty to thirty of other people's children, and without a school physician for consultation and advice, is both unfair and unwise.

If the pupils of a school are receiving their necessary immunizations and health examinations in the hands of their family physician, I would be the last to recommend setting up a scheme of health examinations in the local school. But even in the ideal situation where the family doctor is providing periodic health examination, it would seem to me that there is still need for a regularly appointed school physician to whom the teacher may turn for advice and counsel in such matters as suspected communicable disease, growth and development problems and behavior problems. Whether such health service is provided by educational authorities or by local public health authorities is less important than that it somehow be provided. Similarly, it can be said of nursing service that somehow it must be made available to assist the one-room rural schoolteacher. But because of the distances between schools, and the close connection between disease or infestation of the school child and disease or infestation in the home, it would seem particularly desirable that the nursing service to these rural schools be provided by the local public health nurses who are authorized and equipped not only to work with the child but to carry the work back into the farm home. Upon the request of the teacher, the public health nurse may visit a rural school and, acting upon standing orders written by the health officer under whose direction she works, not only eliminate the pediculosis in the school child but also go back into the home and eliminate the family infestation.

The School Physician

In those rural areas where periodic health examinations are rarely done by the family physician, the need for the school physician is even more urgent. He should not, however, be hired either by the local school or by the local health department just to come in once a year, give every child a rapid examination and then depart with the feeling that "at least that routine job is done for another year." Figures show that school children are at the healthiest period of their lives; in most instances, health examinations done every three years will be adequate, provided parents and teachers are alert to refer the child to the physician when signs of acute illness or handicapping defect appear between examinations. The school physician can therefore make the best use of his time in the school if he gives first priority to those children culled out and referred by the teacher, second priority to health examination of those entering the first grade, those entering fourth grade, and those entering seventh grade. The physician serving the school must be responsible for establishing professional standards for the health examination, and he should refuse to participate in a school health program which lines the children up and parades them by the examining physician so rapidly that he "rarely sees the boy or girl back of the throat." Not more than three or four health examinations should be scheduled per hour, and the time-consuming health history, vision testing, hearing testing, and weighing and measuring should already have been recorded by the teacher and parent with the guidance and assistance of the nurse. The advice which the physician gives the child, and the parent if he is present, at the completion of the examination, is of the greatest importance, first because it is based upon the specific needs of that child, second because it carries the authority of the medical profession behind it. If time is not taken for this summary and advice, the physician is failing to utilize his chief opportunity for health education.

The Teacher

The rôle of the teacher in a one-room rural school is admittedly a difficult one, and what is expected of her is frequently far beyond what any one person can accomplish. It is nevertheless true that in almost every county in this country there are rural one-room schools that can be pointed to with pride by the county superintendent as schools in which health is both taught and practiced. The atmosphere of the classroom is cheerful and bright; each child feels that his individual needs and desires are being given consideration; physical activity alternates with mental activity; health practices jibe with health instruction; health instruction is planned and progressive, and deals with problems that are found in the local school, home, or community; the morning health review is carefully and consistently done; the teacher is thoroughly aware of all of the community's resources for recreation, for remedying defects, for making adjustment to severe handicaps.

In order to bring about such a happy situation it may be presumed that the teacher should have had in her training days courses in child growth and development and in the hygiene of the school child. Most often she has had none. Summer school courses, teachers' institutes and health work shops may have helped many of such teachers but the majority of successful school health programs appear to be largely the result of the teacher's individual interest and effort. With the whole community and its health needs to study, with modern textbooks as tools and with the help of *Hygeia* bringing its monthly contribution of new health facts, every teacher can, if she has the interest and energy, provide an effective if not all-inclusive school health program.

Conclusions

1. Though the rural school child as well as the city child needs and is entitled to an effective program of health education, health protection and health promotion, in many instances he is not getting it.

2. Generally effective school health programs in rural areas may have to await consolidation of rural schools.

3. The three chief assisting services that can be given rural teachers and county superintendents are those of a health co-ordinator, those of a school physician, and those of a public health nurse.

4. Every school should have a physician on call but his time in the school should not be frittered away in doing annual examinations in a superficial way.

5. The school physician by limiting routine examining to every three years will have time to study problem children selected by the teacher and to offer valuable personal advice upon completion of the examination.

6. Some teachers in isolated schools manage to provide effective health programs. Many more could do so if they were interested, encouraged and assisted.

7. Medicine now has a tremendous volume of knowledge as to how to prevent, modify or cure disease. Much of this knowledge is useless unless it is in the minds of the general public. The schools offer the ideal means of putting important health facts at the disposal of the public. It is therefore of vital interest to the medical profession and all those interested in human welfare that our school health programs, both rural and urban, function smoothly and effectively.

HYPERTENSION

Of first priority on the list of causes of physical disability is hypertension, or hypertensive cardiovascular-renal disease. This is not primarily a vascular disease but a definite syndrome caused by kidney dysfunction. It manifests itself in hypertension, cardiac hypertrophy, secondary degenerative changes in the kidney itself due to the circulatory changes, and degenerative changes in other organs, including the brain. Malignant hypertension is merely a severe and terminal stage of the process.

In evaluating the blood pressure, the diastolic is the important factor. A persistent diastolic of over ninety is considered abnormal. Blood pressure may be evaluated most truly just before or after the patient arises in the morning, or while he is asleep. A normal size heart is found with the volatile type of hypertension. An enlarged heart is indicative of a chronic progressive disease. The eyeground picture reveals the state of the capillaries. Concentration tests of the urine will tell the condition of the kidneys. Blood pressure readings alone should not be the sole criterion for the severity of cardiovascular-renal disease.

In the management of real hypertension, the commonly used bromides, barbiturates, and potassium thiocyanate are not effective enough. Properly done, sympathectomy is a severe and radical treatment not on a generally recognized basis. It does not attack the cause of the disease. Its best use is for the malignant type of disease.

At present, the most gratifying relief of the symptoms of headache and "jumping out of one's skin," together with the reduction of the hypertension without danger and great expense, is the maintenance of the sodium chloride in the food to approximately 1.2 gm. a day. With such a low sodium intake the fluid intake may be as liberal as desired. The sodium intake can be checked by the chloride content of the urine. It is essential to keep up the protein intake. Many proteins are rich in sodium. Protein foods extremely poor in sodium are being prepared commercially. With the relief obtained by such a dietary regimen, co-operation of the patient may be expected.

In the meantime, the important search for the specific underlying cause of the kidney disease will go on.—Editorial in *The Journal of the Indiana State Medical Association,* October, 1947.

PHYSICAL EDUCATION IN RURAL SCHOOLS

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PHYSICAL education, when given its rightful place in the schools, can be an adjunct of preventive medicine, a resource for the physiatrist and orthopedist and an ally of the general practitioner. Mutual understanding, appreciation and respect for the status, activities and objectives of closely related professional groups are essential for co-operative relationships. This is why insight by the physician into the problems of physical education and its present professional development will aid greatly in bringing about rapport between the two groups.

The program of health in the schools plays a major rôle in conditioning the attitudes of youth toward health and medical care. The physical educator's eminent place in the school health program makes his relationship with medicine especially important.

Certain fundamental principles of physical education are applicable for rural school programs as well as for urban education. Physical education may be thought of as one of the broad subject areas within the total school curriculum, and physical educators like physicians have come to realize that they cannot deal with one aspect of the child's development without impinging on the factors which make up his total personality. This means that there must be stress on education along with emphasis on the physical.

Modern physical education is concerned with education *through* the physical as well as education *of* the physical. It aims at making a contribution to physical health but is also cognizant of the potentialities that are inherent in its activities for desirable social, mental and emotional outcomes.

Qualities such as loyalty, self-control and cooperativeness can result from physical education under skillful guidance, but these things have to be taught just as arithmetic needs to be taught, and are not the natural accompaniment of the activities themselves. Joyous physical recreation has implications for mental health, in that there may be considerable relief from the tensions that are all too prevalent in the child's life today. Children who become skilled at games, sports and other forms of exercise find opportunity for self-expression in physical activity and at the same time gain a sense of achievement through good performance.

Vigorous, intelligently directed activity can aid in the development and maintenance of strength, speed, agility, endurance and skill, in children who are physiologically sound. Determination of the program and types of activities in terms of games, sports, swimming, rhythmics and prescribed activities can be made only after thorough health appraisal and recommendation by the physician.

Those who are carefully guided in their school physical education experiences should enter adult life with an appreciation of the needed balance between exercise, rest and relaxation.

At the present time there are over 300 colleges offering majors or minors in physical education, health education or combinations of the two. One accomplishment has been the increase in the length of these courses, along with those for other teachers, to four or five years. But curriculum patterns vary to a considerable degree, requirements are far from uniform, and faculty qualifications have not been standardized. In addition, certification standards for the teaching of physical and health education have not been fully developed. But these conditions are no more difficult than those which prevailed in medical education only a few decades ago. Vigorous professional action like that which cleared up the similar situation in medicine is obviously needed.

Problems of inadequate salaries and unsatisfactory teaching conditions further complicate the picture. We cannot expect the needed type of young people to enter the field until the compensation is somewhat commensurate with the training required. Genuine interest in the development of youngsters keeps many good teachers on the job but the economic insecurity they suffer is bound to materially lower their effectiveness.

The medical profession has made great strides in rooting out the quacks who attempt to foist

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Read at the Rural Health Conference at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

unscientific methods, worthless devices and harmful remedies upon the people. Physical education has yet hardly begun the fight against the cultists who seek to invade its ranks. Muscle for muscle's sake theories, exercise prescribed through the mails, useless exercise appliances and "physical culturists" who have never heard of basic science may be wrongly identified with physical education by the public and so undermine the integrity of a developing profession.

Organized medicine has been largely successful in warding off public pressure for premature or ill-advised use of the spectacular. But education has often been unable to resist public demand for sports spectacles by the few at the expense of adequate physical education for the many. Properly administered spectator sports can have a wholesome place in education. The skilled performance of varsity groups should motivate wide participation by our youth on many types and calibers of teams. But an interscholastic sports program which stimulates "spectatoritis" among our boys and girls cannot be classed as educationally sound.

Over a century of socialization of the schools of America has not brought solutions to educational problems in rural areas. There are shortages of physicians in many rural districts but there are shortages of teachers in the same places. Just as better facilities and more adequate personnel for medical service are found in urban areas, so are the personnel and facilities for education.

Well-developed outdoor play areas, gymnasia, swimming pools and other equipment which are the laboratories and clinics of physical education are almost entirely lacking in the rural areas.

Neither the little red school house nor its counterpart in the hospital has been able to provide the conditions requisite to an educational program or medical care of the quality to be found in metropolitan regions. Recommendations of many groups indicate that at least a partial answer to this problem may come about through the consolidated school and the affiliated hospital.

In many rural situations, teachers who might be called general practitioners in education are directing instruction. At the elementary school level in the small schools, the teacher may handle her own physical education as well as all the other subjects. In the smaller high schools we have the P.E. and S. men; that is, the people who teach science, physical education and many other combinations. With adequate background, effective in-service education and helpful supervision, acceptable work may be done. But many practical difficulties stand in the way.

In Minnesota, for example, among about 1,100 men and women teaching physical education, some 300 had a major in the field and only about 130 had a minor. Another 130 were granted permission to teach part-time in physical education by reason of completion of a nine-quarter hour requirement. Over 550 had no certificate but 450 of these attended short-term regional fall training conferences and subsequently were granted permission to teach. Obviously the best prepared of these teachers will be found in the larger communities where teachers like doctors seem to find the opportunities greater, equipment and facilities more to their liking, and living conditions more attractive.

A program for interpretation of physical education to the public and to the home is badly needed. Rural parents may often believe that their children secure enough exercise doing the chores at home and therefore have no need of physical education in school. Nothing could be further from the truth. They often need it more than the city children do. While the country youngster ordinarlily gets plenty of exercise, he too frequently lacks the skill to play and work well with others. He is too often an example of poor co-ordination and awkwardness in the extreme. His posture and body mechanics are apt to be very poor, and his home program of exercise but rarely gives him a background to enjoyment of physical recreation activities.

Understanding physicians, parents and teachers are aware that the play life of children is just as important to growth and development as are work experience and academic learning. They also recognize the necessity for skillful guidance in these activities if their inherent values are to be realized. But many of the opportunities which have been accepted as the natural heritage of the city youngster have been denied to rural youth.

Some teachers and administrators are unsympathetic toward the school health and physical education program. Persons who are primarily academic in their thinking may not sense the tremendous educational possibilities that exist in the wholesome physical education activities which are so close to the heart of the child. The lip service that has been given to the health objective in education must be translated into action, and the real life experiences that are available utilized to their fullest extent.

Courses in teacher education institutions need to be re-evaluated and, when necessary, the offerings in physical education increased and reorganized so that elementary teachers will be prepared to teach physical education effectively under supervision.

In-service education programs, including institutes such as those which have been conducted in Minnesota, workshops, summer school courses and other devices to help teachers in service to become better qualified for instruction in physical education, should be developed.

Supervisors, co-ordinators or consultants in health and physical education need to be provided, especially in rural areas, to help teachers to plan and develop worthwhile programs.

At the secondary level people who can teach health and physical education in our rural high schools and assume responsibility for co-ordinating rural recreation programs can be prepared. This combination will make it possible for a rural community to procure a person with major training in the field. To go into the reasons for securing a specialist to do this important job is unnecessary.

The school program of physical education activities must be broad and varied and take into account the needs and capacities of individual pupils. Classification of pupils for activity as the result of a medical examination is a prerequisite to desirable physical education. There needs to be a program for girls and boys who are capable of enjoying a full schedule of activities, a modified plan for children whose exercise must be restricted, and prescribed corrective activities for those who will benefit from such a routine. The physician's advice in respect to the individual child's place in this program is vital to its success. Then there must be real teaching which places emphasis on individual needs.

Sufficient time for instruction and enough facilities, supplies and equipment to make possible an adequate program are essential. The class period in physical education needs to be regarded as a time for effective instruction and not as an occasion for undirected play. There should also be a chance to practice and enjoy the skills learned in the classes during leisure time. Informal games and a broad intramural sports program within the school, as well as competition against teams from other schools, can provide all students with such an opportunity.

All of this will cost money. So will better medical care, hospitals and public health services. There are ways of planning intelligently to get the most for our money but there is no way to provide the kind of educational program our children need without reasonable financial outlay. Physicians are familiar with the expenditures, present and needed, for medical care, hospitals and public health. It is interesting to note the parallels with educational investment.

At the present time in this country we are spending less than 2 per cent of our annual income on education. Great Britain is engaged in an educational program that will take between 6 and 7 per cent, and Russia is planning to use between 17 and 20 per cent of its national income for educational purposes. Each year in the United States we spend more for amusements, tobacco, liquor or cosmetics than we invest in the education of our youth.

The improvement of physical education in our rural schools cannot be isolated from the enrichment of education in general, and the betterment of public health, medical facilities and medical care. These things can be achieved only when all the professional and lay groups concerned plan and work together as a team. Through wholehearted participation on this team, the medical profession will place itself in a strategic position to provide leadership and guidance in the advancement of rural health and rural living conditions.

HOSPITAL FACILITIES FOR ALL

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THE important health objective of reasonably adequate hospital facilities for all the people has become a realistic possibility with the enactment of the Hospital Survey and Construction Law. Under this Act the Congress has authorized an appropriation during each of five years of $75,000,000, or a total of $375,000,000, to assist in the building of needed hospitals and public health centers. Since the law provides that the Federal share shall constitute one-third of the cost and the non-Federal funds the other two-thirds, the law provides for a nation-wide hospital building program in the amount of $1,125,000,000.

Purpose of the Program

The essential purpose of the law is to provide Federal financial assistance to the states for the attainment of "the necessary physical facilities for furnishing adequate hospital, clinic, and similar services to all their people". This purpose is to be carried out through the following activities:

1. The determination of the hospital and public health center needs through state-wide surveys.
2. The development of a state-wide plan for the construction of facilities needed to supplement existing hospitals.
3. The construction of the facilities determined to be necessary and which conform with the construction program which is part of the approved state-wide plan.

The law provides for the construction of facilities for all kinds of patients and the types of hospitals which may be constructed under this program include general, tuberculosis, mental, chronic disease and other types of special hospitals but not those furnishing primarily domiciliary care. Hospital-related facilities including laboratories, out-patient departments, nurses' homes and teaching facilities may be constructed. The building of public health centers established for the provision of public health services authorized by state and local laws, including related facilities such as laboratories and administrative offices, also may be assisted under the law. The term "construction" as used in the law is defined to include the construction of new buildings, the expansion or remodeling of existing buildings, and the initial equipment of the constructed facility.

Administration of the Law

The Federal administration of this program is the responsibility of the Surgeon General of the United States Public Health Service in the Federal Security Agency. The Surgeon General issues regulations governing development and administration of state construction plans. The United States Public Health Service also prescribes minimum standards of construction and equipment of hospitals and assists through development of sample plans and the giving of expert advice on problems. The United States Public Health Service has the assistance of a Federal Hospital Council composed of eight members appointed by the Federal Security Administrator of whom four shall be outstanding authorities in the operation of hospitals and health activities and four members shall represent the consumers of hospital services and be familiar with the needs in urban or rural areas. The Federal Hospital Council has the responsibility of approving the Federal regulations governing the state plan for hospital services and the State Hospital Construction Program. The Council also serves as an appeal body for consideration of the approval of state plans and has advisory functions in the Federal administration of this program.

To qualify for the grant of Federal funds, a state must designate a single agency to conduct the state-wide survey and planning, and a single agency to administer the construction plan. One agency may serve for both functions which must be conducted in conformance with the requirements of the Federal law and regulations. The state agency must have the consultation of an advisory council which shall include "representatives of non-government groups and of state agencies concerned with the operation, construction or utilization of hospitals including representatives of the consumers of hospital services".

Presented at the Rural Health Conference at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

Surveys and Planning

The Act authorizes the appropriation of three million dollars to assist the states in surveying their needs for hospitals and related facilities and in the development of plans for the construction of needed additional hospitals and public health centers. Of this authorized amount, $1,791,000 has been appropriated. This fund will be allotted among the states on a population basis and shall be available to defray the cost of state functions only in the making of surveys and planning during the five-year period of the program. Within its allotment each state will receive Federal grants equaling one-third of its expenditure for these purposes. The remaining two-thirds of the survey and planning costs must be provided by the state.

This program has placed difficult responsibility on the state. Under the terms of the law and the Federal regulations, the planning must be concerned with the total number and general method for equitable distribution of hospitals. All categories of patients and all areas of the state must be considered and a plan made to meet the needs in a balanced and coordinated system of hospital service. Factors to be studied include the number and distribution of the population, travel and trade patterns and the physicians and nurses available to staff the proposed hospitals. Plans for construction must be guided by the financial resources available for construction and for maintenance and operation. The minimum functions involved in this work include an inventory of existing facilities, a survey to determine the need for additional hospitals, the development of a construction schedule and a priority system for the allocation of the Federal funds in the order of relative need for the individual project.

For the purposes of the Act facilities are considered to be adequate in the state if hospital beds are provided in the various categories according to the following ratios:

1. *General and Allied Special Hospitals*—4.5 beds per 1,000 population.
2. *Tuberculosis Hospitals*—2.5 beds per average annual death from tuberculosis.
3. *Mental Hospitals*—5 beds per 1,000 population.
4. *Chronic Disease Hospitals*—2 beds per 1,000 population.
5. *Public Health Centers*—1 bed per 1,000 population.

These allowances are for the state as a whole. Within the state the Federal requirements intend that general hospitals be planned on an area basis to provide a pattern for a co-ordinated hospital system. The *base area* with a large teaching hospital serves several *intermediate areas* having smaller general hospitals. Each of these in turn serves neighboring *rural areas* with smaller hospitals. The ratio of beds to population is graded according to the following standards:

Rural Areas—2.5 beds per 1,000 population
Intermediate Areas—4 beds per 1,000 population
Base Areas—4.5 beds per 1,000 population

The Construction Program

The $75,000,000 annual construction fund appropriation authorized by the Act for each of the five years is to be allocated to the states on the basis of factors of population and per capita income. This formula will give higher allotments per capita to low income states. Out of each $75,000,000 appropriated, the Minnesota allotment will be $1,655,175. Since one-third of the construction costs may be met from the Federal funds, there is a possible annual construction program in Minnesota in the amount of $4,965,525. The Congress has not actually appropriated construction funds, but late in its last session it did authorize the activation of the construction work during the fiscal year 1948 through contractual obligations for the Federal share in approved projects within the limitations of state allotments and the total of $75,000,000 for the country as a whole.

However, before a state may receive federal grants for construction purposes it must submit to and have approved by the United States Public Health Service a state plan for construction of needed hospitals which must conform to the described principles of planning. In addition the state plan must provide for the adoption of minimum standards of construction which shall not be less than the Federal requirements and establish the necessary administrative organization and methods. Also, the state must provide the funds to finance the administration.

Project applications may be received for consideration by the state agency only when this work is completed. When that time comes project applications are to be processed in the order of priority of need insofar as local funds are available for construction and operation of the hospital. In establishing priorities, consideration must be given to the relative need in the various categories of hospitals and, for general hospitals and public health centers, there shall be emphasis on rural areas and those with relatively small financial resources. Also, priority is to be given to new hospitals and additions to existing buildings, and projects of a size consistent with efficient and economical operation.

In addition to priority requirements the individual project must meet eligibility factors set forth in the Federal law and regulations. These factors which are designed to promote qualified community hospital service, are as follows:

1. The hospital is needed as shown in the state plan for hospital services.
2. Public or other non-profit ownership of the hospital, which means that no part of the net earnings of the constructed hospital may lawfully inure to the benefit of any private individual.
3. Assurance by the owner that hospital services will be provided in the community without discrimination on account of race, creed, or color.
4. Assurance by the owner that hospital services will be provided in reasonable amount to persons in the community unable to pay therefor.
5. Ability of the owner to finance two-thirds the cost of the construction.
6. Ability of the owner to finance the operation of the hospital for which evidence must be provided.
7. Ownership of a suitable site for the hospital.
8. Development of blue-print plans and specifications for construction of the proposed hospital by a registered architect in conformity with the state and Federal requirements.

Present Status in Minnesota

Under the provisions of existing statutes, the Governor of Minnesota designated the Minnesota Department of Health to conduct a Hospital Survey and Construction Program in cooperation with the United States Public Health Service. A State Advisory Council has been appointed and is functioning in a consultative capacity. An inventory of existing facilities has been conducted and this information is now being prepared for use. A study of total needs for hospitals is under way and it will require a number of months to complete this work and develop the construction schedule and priority system as well as make other preparations for administering the program in the state.

The inventory of existing facilities was conducted by the staff of the Minnesota Department of Health during the period extending from May, 1946, to April, 1947. Although the study of information collected in this survey is not yet completed, certain preliminary data are available. These data relate to the numbers, bed capacities and uses of the various types of institutions and certain conditions of staffing, equipment and physical conditions of these buildings. This information is presented in the series of nine tables included with this report.

TABLE I. NUMBER OF INSTITUTIONS AND NUMBER OF BEDS IN VARIOUS CATEGORIES

	Number of Institutions	Number of beds (complement)
General & Allied Specials	196	12,846
Maternity Homes	32	70
Serve Special Groups	17	706
Nervous & Mental	15	12,107
Tuberculosis & Preventoria	15	1,971
Chronic & Convalescent	128	2,839
Totals	403	30,539

Preliminary Information on Existing Hospitals

As shown in Table I, the inventory revealed 403 institutions with a total of 30,539 beds available for the care of the sick and injured and for obstetrical cases. Approximately five-sixths of these beds are about evenly divided between the general and allied special hospitals and the nervous and mental group. The allied special group is made up of the pediatric, contagious, cardiac, orthopedic and other specialized hospitals for which a separate listing was not prepared. The 1,971 beds in fifteen tuberculosis hospitals are considered quantitatively adequate for the needs of the state. The 128 institutions with 2,839 beds for the chronic and convalescent include a few hospitals and the relatively large number of nursing homes established for the care of these patients. There are only seventy beds in the disappearing maternity home, which is the 1 to 3 bed facility for normal maternity patients estab-

TABLE II. TOTAL COMPLEMENT AND NORMAL BEDS IN GENERAL AND ALLIED SPECIAL HOSPITALS

	Beds		Bassinets	
	Complement	Normal	Complement	Normal
General	12,194	11,561	2,499	1,376
Allied Specials..	652	616		

TABLE III. NUMBERS OF HOSPITALS IN CATEGORIES DISTRIBUTED BY BED CAPACITY

	Number of Hospitals	Bed Capacity			
		1-24	25-49	50-99	100 & over
Gen'l & Allied Specials.	196	92	49	25	30
Nervous & Mental......	15	4	3	0	8
Tbc. & Preventoria.....	15	0	6	5	4
Chronic & Convales....	128	95	22	7	4
Totals	354	191	80	37	46

TABLE IV. NUMBER OF HOSPITALS IN CATEGORIES DISTRIBUTED BY PER CENT OCCUPANCY OF NORMAL BEDS

	Number Hospitals Reporting	Per Cent		
		Less than 60	60-79	80 & over
Gen'l & Allied Specials..	193	62	62	69
Nervous & Mental......	15	2	1	12
Tbc. & Preventoria.....	15	4	4	7
Chronic & Convales.....	124	21	37	66

TABLE V. HOSPITAL PERSONNEL BY DEPARTMENTS
For 188 general and allied special hospitals
with bed complement of 12,760

	Numbers of Personnel	Numbers of Personnel per 100 beds
Administrative	798	7
Dietary	1,563	12
House and Property.............	2,280	18
Professional	9,868	77
Totals	14,509	114

lished by a nurse in her own home in a community without hospital services. The seventeen institutions serving special groups include the infirmaries and hospitals of institutions such as schools, prisons, and reformatories.

The effect on bed capacities of this period of high hospital service demand is presented in Table II. The general hospitals provide more than 600 extra beds as shown by the difference between a complement of 12,194 available beds and the total normal capacity of 11,561 beds. While the hospitals have also set up extra bassinets for newborn infants, the difference between the complement and normal bassinet counts as shown in this table is due largely to the unusually high floor area standard used in this study for the determination of normal bassinet capacity.

It is interesting to note in Table III the relatively large number of small hospitals existing in Minnesota. Of 354 general and specialized hospitals, 191 institutions have bed capacities of twenty-four or less. This number includes ninety-five nursing homes in the chronic and convalescent category. However, of the 196 general and allied special hospitals, ninety-two have capacities of twenty-four beds or less and an additional forty-nine have capacities in the twenty-five to forty-nine bed group. Seven of the total of fifteen institutions for nervous and mental patients have forty-nine beds or less and six of the total of fifteen tuberculosis hospitals fall in the twenty-five to forty-nine bed capacity group.

Closely related to the large number of small hospitals is the surprising number of institutions reporting a relatively low percentage of occupancy during the report year of the study. Of 193 general and specialized hospitals giving this information, sixty-two reported an occupancy of less than 60 per cent. In the small hospital this is due to the uneven flow of the number of daily admissions and to the inflexibility of accommodations for care of various diseases and the variation of patients as to sex and age. Therefore, the information reported in Table IV does not indicate a surplus of hospital beds.

The data on hospital personnel by departments as reported by 188 general and allied special hospitals are summarized in Table V. These hospitals with a bed complement of 12,760 available beds reported a total of 14,509 personnel. This is a ratio of 114 workers per 100 beds. While hospitals having nursing schools and other teaching programs will have a higher ratio, which may approach two staff members per bed, it is significant that the average Minnesota hospital employs workers in a number more than equal to its bed capacity.

TABLE VI. NUMBER OF HOSPITALS IN CATEGORIES WITH RESPECT TO DIAGNOSTIC FACILITIES

	X-ray in Hospital		Laboratory in Hospital	
	Yes	No	Yes	No
General & Allied Specials	172*	24	139*	57
Nervous & Mental	8	7	10	5
Tuberculosis & Preventoria	14	1	13	2
Chronic & Convalescent	2	126	3	125
Totals	196	158	165	189

*In hospital.....140
In Dr.'s office in same bldg.... 32

*In hospital.....107
In Dr.'s office in same bldg... 32

TABLE VII. NUMBER OF HOSPITALS IN CATEGORIES GROUPED BY YEAR OF CONSTRUCTION OF MAJOR BUILDING

	Number of Hospitals	1909 & before	1910-1919	1920-1939	1940 & after
Gen'l. & Allied Specials	184	36	54	74	20
Nervous & Mental	15	10	2	3	—
Tbc. & Preventoria	15	—	10	5	—
Totals	214	46	66	82	20

The number of hospitals in various categories without x-ray and laboratory facilities in the building is presented in Table VI. Twenty-four general and allied special hospitals do not have x-ray equipment and fifty-seven of this group are without laboratory facilities. This preliminary study does not attempt to analyze the extent of the equipment or service provided in the hospitals which do have the facilities. Thirty-two of these hospitals have the benefit of use of x-ray equipment and laboratory facilities in physicians' offices in the same building.

TABLE VIII. NUMBER OF HOSPITALS IN CATEGORIES DISTRIBUTED BY TWO CONSTRUCTION FEATURES

	Fire Resistive Construction		Built as Hospital	
	Yes	No	Yes	No
General & Allied Specials	81	115	140	56
Nervous & Mental	3	12	11	4
Tuberculosis & Preventoria	8	7	15	—
Chronic & Convalescent	8	120	18	110
Totals	100	254	184	170

TABLE IX. CONTEMPLATED HOSPITAL BUILDING PROJECTS IN MINNESOTA

June 1, 1947

	New Hospitals	Replacements	Additions	Remodeling	Total
Gen'l & Allied Spcl.	61	38	58*	18	175
Nervous & Mental			9		9
Tbc. & Preventoria			3*		3
Chronic & Convales.			5**		5
Totals	61	38	75	18	192

*Includes two nurses' homes
**Includes three planned in conjunction with general hospitals

Certain major features of the physical condition of Minnesota hospitals are presented in Tables VII and VIII. In forty-six of 214 general and allied special, nervous and mental and tuberculosis hospitals, the major building is thirty-seven or more years old and another sixty-six are twenty-seven or more years old. Of the total group of 354 general and specialized hospitals, including those for chronic and convalescent patients, more than three-fifths are not of fire-resistive construction and nearly one-half were not built as a hospital. These figures are influenced by the relatively large number of nursing homes established in dwelling-type buildings. However, only eighty-one of 196 general and allied special hospitals are classified as of fire-resistive construction. Also, 50 per cent of these institutions were not built as a hospital.

Information available to the Minnesota Department of Health on June 1, 1947, indicated a total of 192 contemplated hospital projects in this state. As shown in Table IX, these include sixty-one new hospitals, thirty-eight replacements, seventy-five additions to existing hospitals and eighteen remodeling projects with the majority of the planning in the general hospital category. This information covers all sizes of institutions in the various categories as well as all proposed construction projects irregardless of the stage of development. A number of these hospitals are under construction. This information indicates a state-wide interest in hospital construction which gives the hope for the needed effort and funds to provide the improvements and new hospitals which will give reasonably adequate hospital facilities for all.

RURAL MEDICAL SERVICE

FRANK J. HIRSCHBOECK, M.D.
Duluth, Minnesota

AS one reads current periodicals and newspapers, one might gain the impression that the physicians of this country are in league to debar the American public from adequate medical treatment. Much passion and prejudice is evinced, and the onus of inequality of service is placed on one profession without regard for a sane and dispassionate discussion of all the factors involved. To the credit of the various rural agencies and the participants in the conferences on rural health held under the auspices of the American Medical Association, one is, on the other hand, impressed by the fair-mindedness of nearly everyone in attendance at these meetings. It is evident that so great a problem will require considerable survey and analysis before satisfactory results may be obtained, and I feel it a definite responsibility to bring this matter before you for your consideration and review.

At the present time, I believe it cannot be gainsaid that the type of medical service provided in the United States of America is superior to that of any other country in the world, but it is also admissible that there is, nevertheless, opportunity for improvement. In a prefatory way, it should be stated that physicians, in a large measure, are in full sympathy with any program tending to foster better medical care in rural areas. The need is existent and recognized; the methods of correction must be explored. Critical statements that the AMA seeks to keep the number of medical students at a selfish low level can be refuted by the dean of any medical school, as has been indicated in the words of Dr. Diehl of the University of Minnesota. The problems of medical education and its significance for medical practice are manifold, and it should be remembered that certain obstructive elements, as inadequate educational facilities, lack of teachers, inadequate laboratories in many instances, and insufficient internships, all play a part. An argument for accelerated programs in the schools may be met by the contradiction that such programs are not to the best advantage of the student nor the public, and may prevent participation by worthy students who may be obliged to work for much of their education.

In the *Saturday Evening Post* of May 17, 1947, an article by Albert Q. Maisel entitled SO YOU CAN'T GET A DOCTOR accuses the AMA and the medical schools of the country of practicing a cut-back program favoring a deficit of physicians. He cites Dr. Victor Johnson, of the AMA staff, appearing before the Senate Committee on Military Affairs, where it was stated that the postwar years would require 35,000 additional physicians to permit an adequate supply, and that of 40,000 graduates in six years, 24,000 would be replacements for deceased physicians, allowing only 16,000 to provide for the necessary 35,000. This statement is true insofar as it relates to this specific factor, but the interplay of other elements is not quoted.

There is little doubt that medical service was inadequate during the war years and that adequate medical care was not available to all our citizens. On the other hand, everyone recognizes the inevitable dislocation in all channels of life in the greatest cataclysmic upheaval of all time. It is admitted, I believe, that the armed forces in enrolling 60,000 physicians, or about 45 per cent of all those in practice, took more physicians from civilian practice than may have been necessary, but few of us would quarrel with the exigencies entailed in a struggle for national survival. In many areas where only a few physicians were in practice, the enlistment of some caused medical hardship on the citizenry, but the Committee of Procurement and Assignment, of the American Medical Association, performed a difficult duty with remarkable foresight and success, though frustrated no doubt in many instances by voluntary enlistment on the part of patriotic physicians without due regard for area needs, which unbalanced the per capita alignment.

In his presidential address at Atlantic City, President Bortz of the AMA pointed out that the medical branches of the armed forces have been separating medical men from the services as rapidly as safety permitted, liberating many for the resumption of practice.

From the Department of Internal Medicine, the Duluth Clinic, Duluth, Minnesota.

Read at the Rural Health Conference at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

Many medical veterans, having noted certain advantages of the type of practice in the army hospitals, particularly with reference to specialization, have been imbued with the apparent advantages of specialization in practice, and on discharge have sought residencies and fellowships to further a program for ultimate certification by the specialty boards. Others, planning on returning to general practice, and aided by Federal subsidies, have undertaken graduate training to prepare them more fully for a return to general practice, recognizing the fact that many aspects of military experience were also conducive to professional stagnation through limitation to certain types of medicine, notably among healthy males between the ages of eighteen and forty. Twenty thousand physicians, it is said, who have availed themselves of such graduate training, will in the next few years be searching for a location. A large number of recent graduates have also been inducted in the Army, Navy and Air Forces, a practice which may or may not, depending on national emergency, be abandoned in a year or two, further allowing young men to select a site for practice.

The proper civil reallocation of such personnel is an immediate and urgent problem, to which the various state committees should apply themselves.

Unfortunately, partisan expression on both sides of any problem often leads to discord that defeats the ultimate purpose in view. Proponents of a greater supply of physicians lose sight of the fact that an oversupply of doctors may lead to professional stagnation because of lack of work and opportunity, and those who believe in a restricted number of graduates are not aware of the many needs in the rural areas which involve definite social and economic wants. However, it would seem that, in the present state of international relationships and the need of an adequate medical corps, additional increments of medical men and women are needed, and the medical colleges should be, and we trust are, aware of it. A large army, in peace or at war, will by necessity remove many available men from practice, and the additional 10,000 doctors graduated during the war years by the accelerated program are not enough to make up the deficit. During the war, the medical colleges were free to admit that there was an insufficient supply of physicians. Now that a semiemergency still exists the need cannot have been completely eliminated, a fact which I am glad to say our state university has recognized by permitting an increase in enrollment. It is to be remembered also that there was not only a dearth of physicians but, because of the dislocations of warfare, there was a dearth of personnel in virtually every field of human endeavor. Postwar adjustments will correct many of these problems.

Much has been said about the unequal distribution of doctors in urban and rural areas. Broadly speaking, and in a general way, there is much in favor of the view that physicians tend to gravitate to the more metropolitan areas. In years when there is a relative deficiency in the total number of physicians, such a migration is likely, but many of the estimates given in current popular articles need a more critical review. As Dr. Dickinson has indicated recently, state and county boundaries should not be used in considering the supply of doctors because medical service, in a great measure, bears no relation to governmental boundaries. It is closely akin to trading areas and extends beyond county or even state lines.

Before the war, the per capita distribution of doctors in rural areas was 1:1,700 and in cities 1:650. A ratio of 1:1,500 is, I believe, considered desirable. In rural areas the available hospital beds were 2 per 1,000 instead of 3.5 or 4, usually considered adequate in a community. The per capita difference in cities and rural areas is due to several factors aside from mere choice of location. Cognizance must be taken of the fact that the cities are not overwhelmingly supplied with physicians, since many city physicians are specialists. In Duluth, for example, nearly 50 per cent are specialists who tend to attract patients from more remote communities. Many specialists in the cities likewise are not related intimately to family practice and are engaged in special types of work such as public health, roentgenology, pathology, research work and teaching. On the other hand, many men who are specialists perform some elements of general practice, leading to dilution of practice among the general practitioners, and the law of supply and demand, as in other occupations, tends to prevent oversaturation. Nevertheless, I think it is evident that until saturation occurs in the metropolitan areas, rural areas will find it difficult to maintain an optimal supply of medical personnel.

In his article, Maisel writes of certain states and counties having a sad dearth of physicians but doesn't discuss any of the qualifying elements which must prevail in such localities, because physicians, like everyone else, tend to locate in areas where their services are likely to be needed and where they are likely to receive adequate compensation for their efforts. I do not know the situation in the counties in Florida, Virginia and South Dakota, in which he states there is great lack of medical care, but I do know something of our own state as an index. In a recent letter to the American Medical Association Bureau of Information, Mr. Rosell, the executive secretary of the Minnesota State Medical Association, stated our situation as follows:

> "As to physicians' distribution, Minnesota is quite well provided for, as far as medical service is concerned. There are no areas in the state at the present time where physician needs are distressing. In most areas there are physicians within a radius of twenty miles, and there are no areas at present where one must travel much farther for medical service. At the present time, there are 1,000 physicians, mostly returned medical officers, who are training in Minnesota, i.e., doing graduate work or taking continuation courses, residencies or fellowships. These men will be released beginning July 1 and for the next two years. We presume that at least 50 per cent of these men will remain in this state and will meet whatever urgent demands there are for more physicians."

Seven counties in our state have less than one physician per 3,000 people, using the per capita rate as an example, mostly in the northwestern part of the state where five or six good clinical centers exist which may tend to reduce the practice of local physicians. Mr. Rosell reports that the Minnesota State Medical Association has had twenty requests for general practitioners in the state of Minnesota, eleven of which have come from areas of less than 500 inhabitants and some of which, according to personal information received, have no need of a physician in the area as they are well supplied as a community.

Though the problem may not be so acute in Minnesota, and will very likely be less so in a few years, it would be provincial to deny that medical facilities are not always easily attainable in other states, particularly in the West and South. Areas where there is a sparseness in population, or lack of contact with other physicians and medical centers, as is the case in many regions in the northwest, central and Rocky Mountain states, would almost of necessity have less attraction as a choice of location for doctors. These states also have proportionately fewer medical schools to supply needed physicians in the areas. There are only five medical schools in the vast area of the western plain and Rocky Mountain states. It is well known that graduates from medical schools tend to locate largely in areas contiguous to their alma mater. Also it would seem that there should be more opportunity for the medical education of negroes, particularly for the South, where they are an important part of the population.

Every well-meaning student of the problem must realize that the difficulty in providing suitable medical care in rural areas evolves not only upon the dearth of physicians but upon local factors as well. It is stimulating to note the efforts that are being made in various states to find ways and means of solving the problem of proper medical care, which can be done only by a consideration of all factors concerned.

Mr. Goss of the National Grange has offered several fundamental statements indicating the need of community programs, and one cannot find fault with his conclusions. He points out the need of additional physicians and hospital beds in many of our rural communities. It is also stressed that, though conditions have improved among farmers in regard to income in recent years, financial necessity still precludes the farmers' paying as much for medical service as other classes of workers and, in many cases, often where there is a sparseness of population and a lack of good arable land, it is relatively impossible. Conceivably there may be a few areas where adequate medical care may be impossible also, because of local conditions. To apply general rules to all areas to conform with the needs of such isolated instances would be unsound economics.

Mr. Goss also points out the need of better health measures in rural communities, based on the increased accident rate among farm workers, the increased infant and maternal mortality rate, and the rejection of 41 per cent of farm boys in the Selective Service as compared to 25 per cent in urban areas, purely on physical defects. Wherever the fault may lie, these figures at least indicate that the preservation of health and life is better maintained in urban areas, but rural communities, as has been stated by many, today need more than doctors in order to solve their problems. The latter are social and economic, as well as professional. In order to improve his skill and supply stimulus for good work, the physician would choose to live in a community where good housing facilities, good social and educational relationships, good health education, good sanitation, modern living advantages, adequate laboratory and x-ray facilities, hospital and consultation advantages are available. Otherwise he would serve poorly. These advantages are available in many rural areas and towns, but it is in the smaller and more isolated communities where the lack of adequate medical facilities is encountered.

Each community must survey its own problem by a communion of advisory talent, i.e., by health councils as advocated by Rural Medical Service Committees, which should include local representatives, financial advisors, physicians, health authorities, hospital administrators, medical society representatives of the county and state, nurses and dentists. This is quite in contrast to a recent health workshop where twenty-one consultants were called in, nineteen of whom were Federal and two state employes!

In isolated areas, where few towns are situated, the problem of individual care may be difficult and even impossible of solution. This is apparent to any of us. Physicians might be induced to locate in such a community if a subsidy were provided, but this would still not answer the need for professional contact with other doctors, with diagnostic centers and hospital facilities. At best, such physicians could render only relatively inadequate medical service.

Probably too much has been said about the doctors and not enough thought given to their wives and children, who are, as members of a professional group, more critical of social inadequacies. Also in such areas public health and first aid services would be of help, as they have proved in urban areas. To facilitate better care in such outlying and sparsely settled districts, good roads are essential and satisfactory transportation facilities of great importance. It is frequently more important to bring the patient to the doctor in an organized hospital than to try to bring a doctor to the patient. Ambulance service could be on a wide community basis and staffed by someone skilled in first aid. More seriously sick and injured patients requiring ambulance service usually need the type of treatment only a hospital can supply. After the initial outlay, the cost of maintenance should be relatively small.

The construction of rural health centers, as advance stations in medical care, is desirable. They are as necessary to a community as schools. They would be of educational and therapeutic value.

In some areas on the borderline of economic balance, physicians might be supplied with office space and equipped with an available bed for temporary but necessary care and observation, pending further disposition. A method of partial subsidy might be invoked.

In such locations, if physician service is to be maintained, the physicians must be patronized. In many areas, sick people tend to by-pass their own community physicians and go to doctors in a more remote location, and physicians in smaller towns frequently complain of a lack of loyalty among their clientele. I think this may be illustrated by again referring to the six counties in the northwestern part of the state where there is a low per capita rate of physicians and where it is likely that patients tend to go to the trading areas where clinics exist for their medical care. I think this must be an important factor in this region in view of its noted fertility and financial competence.

Many areas need better hospital service, and, on the other hand, many are well supplied. When the Hill-Burton Act begins to function it is going to be difficult to separate the communities which have adequate hospital service, sometimes privately owned, from those where it is felt that such service may not be adequate. It is certain that only an impartial, unprejudiced analysis for allocation of any funds derived from the Act will be satisfactory. Such an analysis will have to consider state needs, county needs, local needs, transportation facilities, opportunities for consultation and study by the physician, availability of certain specialists and financial responsibility. Dr. Buerke, at the National Conference, stated that the operation of a hospital entails a yearly maintenance cost approximating one-third of the original outlay. This money will have to be forthcoming from hospital operation and/or local taxation because niggardly administration in the operation of a hospital cannot be countenanced. Local responsibilities, as can be seen, are indeed heavy.

The other necessity to any arrangement is a sufficient supply of medical personnel. Let us admit that more doctors are needed for the care of our rural population. I believe that strongly, especially in this period of semiemergency. The medical colleges, as for example the University of Minnesota, should graduate more students, at least for the present. Control may be practiced later if necessary. Students should be selected from the more isolated areas in greater numbers than is the case at present. Where possible, colleges supplying the South and mountain and plain states should be enlarged, and more applicants for medical education accepted from such areas, in the hope they will return to their native state. It has been suggested that some rural areas might be wise to enter a contractual relationship with local students of promise to enable them to study medicine with the provision that they locate in certain towns. From time to time, replacements could be made by more recent graduates working on a similar plan.

I think it would be expedient to consider requirements for placing recent graduates in general practice for three years or so before obtaining residencies. The objection would be raised that men who have an aptitude for research and teaching would be wasting valuable years in such work, but a system of scholarship reward could be made available to obviate insistence on this requirement in their cases. It might, however, be pointed out that even many research men and teachers might profit by contact with actual practice, and there is no doubt in my mind that specialists, who are not teachers or research men, could profit by experience in general practice. The opportunity for reaping the many admitted benefits of small town practice might offset the desire for specialization. Specialty boards could allow certain credits for such experience, as was done in the case of military service. There is also an advantage possibly in creating a residency for men who might choose to specialize in general practice, if one may be permitted to use a Celticism.

It is felt that there are too many specialists being trained. This is probably currently true because of the demand of the returned medical veterans, who have been led toward specialties because of the financial and ranking emoluments incident to their service. Medical men are professionally ambitious and tend to seek the professional glamor of specialism, a will-o'-the-wisp which is not always realized. Dr. Weaver, in his recent report before the Committee of University Relations, stated, however, that there is a trend toward favoring general practice in recent classes. Up to 1946, 80 per cent of the students indicated a preference for specialization, but in the present class, only 50 per cent indicated such a desire. I believe that if medical students were taught the many undeniable advantages of practice in smaller communities they would be prompted to choose such locations more frequently. Discussions by men in rural practice before the undergraduates would be helpful and influential.

In rural areas, on the other hand, where hospitals are located with care, specialists' consultations should be made available to general practitioners. These hospitals should be uniformly open to all general practitioners, but certain limitations according to the capacity should be placed on staff members for the benefit of the public. Like any other professional group, the administration personnel should be specially trained, and schools are now available for this purpose. Such administrators are most competent to help in the selection of material for the physical operation of the hospital, including medical equipment. Physicians who locate in smaller communities should have an opportunity for graduate work and refresher courses, because the lack of such facilities would not be to the advantage of either the medical man or the people who employ him.

Since the cost of medical care is an important problem, a summary of projected plans might be considered. By and large, feeling among doctors and among most consumers is that the method of payment by government taxation to supply the costs is not suited to American methods. It would be platitudinous and out of place in this discussion to enumerate the various ethical, economic and social reasons which impel doctors to be out of sympathy with such a plan involving a huge bureaucratic control, enormous outlay of funds out of proportion to need therefor, or the results obtainable, and the degradation of professional standards affecting all the phases of practice.

Nor are doctors kindly disposed toward the belief that consumer control on a prepayment basis is a satisfactory method, as it is felt that good medical care can only exist with the profession unhampered by restriction imposed on them by lay people whose viewpoint is necessarily based on economic consideration rather than on professional standards.

This leaves for evaluation, then, methods of prepayment which will permit of free choice of physician and leave the methods of ethical practice in the hands of those who, by tradition and training, are best able to judge of the safest method of practice for the common good. Methods of prepaid medical care have been in existence for over sixty years. The more recent impetus supplied by the Blue Cross Hospital Plan, with its tremendously successful program, has brought forward the question of a plan to supply medical care as well, at a rate commensurate with the schedule of the Blue Cross. The additional farm income of recent years has made it possible to foster ideas, in this respect, for the rural communities. Physicians in most states, including Minnesota, have developed similar plans which already are or will soon be functioning.

Since each state, or even community, has different problems, some flexibility in application will be necessary. The potential subscribers need to be instructed in regard to the insurance plans to assure popular acceptance. This is a necessity for its satisfactory operation. Such an organ already exists through the agency of the Blue Cross, which in this state has been employed as sales agents for this program. To work effectively, it needs extensive support, both in the urban and rural areas, so that the two zones may counterbalance each other in regard to various differences which may arise.

Low-income groups may have to be supported by the tax structure. The plan being launched in this state has been displayed at this meeting and it is hoped that you have acquainted yourself with the details of its operation.

As the popularity of the program expands, the benefits and costs will have to be changed to meet the situation. One of the chief difficulties will be the production of a wide sale of policies throughout the state so as to allow good actuarial appraisal and satisfactory operation. It is certainly as important to insure for health as it is to insure against financial loss from fire, automobile accident or crop failure.

In summary, therefore, I wish to point out that the problem of rural service is not one that is restricted to the community nor to the medical profession, but it is one which requires a most careful survey of each community and its needs. Scarcities in one community may not apply to another, and conclusions based on individual and specific interpretations of factors may be delusive.

The medical profession has certain responsibilities, and administrative agencies, like the AMA, medical colleges and the American Hospital Association, have a great responsibility. On the other hand, there is an equal responsibility which is local. It seems to me that at this time the local responsibility is actually the more difficult problem to surmount.

A SOUND PUBLIC HEALTH PROGRAM

(Continued from Page 1053)

for the common benefit of all, including as powerful associates, labor, co-operatives, management, the press, the churches and the schools.

Let me repeat that the purpose of a sound local public health program is such social action as will bring the richest values and longest enjoyment of life which the inherited qualities of each of us makes possible.

Local government is the instrument created by a free and representative democracy to make possible effective social progress which will be best measured by the health status of our people.

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
Mayo Clinic
Rochester, Minnesota

(Continued from September issue)

Walter Earl Richardson was born on July 15, 1872, at Elgin, Minnesota, son of Joseph Richardson and Ursula Miles Richardson, "Yankee farmers," both natives of Vermont, who in 1858 had come as pioneer settlers to Wabasha County, Minnesota. Of the seven children of Mr. and Mrs. Joseph Richardson there were living in 1943 Walter E. Richardson, M.D., of Rushford, and Frank, Lenora (Mrs. Filkins) and Clara (Mrs. Ellsbury), all of Elgin, Minnesota.

After completing his preliminary education in the schools of Elgin and by extension work from business and normal schools, Walter E. Richardson studied medicine in 1892 and 1893 under the preceptorship of Dr. Franklin Staples and Dr. Edward D. Keyes, of Winona, in preparation for enrolling at Rush Medical College in Chicago. On his graduation from Rush in 1896 Dr. Richardson began to follow his profession in Preston, Fillmore County. He was licensed in Minnesota by examination on June 22, 1899, and in 1900 he moved from Preston to Slayton, in Murray County, where for nineteen years he conducted his own hospital and carried on a general medical and surgical practice; from 1919 to 1931 he was in Pipestone, in Pipestone County, and from 1931 to 1938 at Philip, South Dakota. In 1938 Dr. Richardson returned to Minnesota, to settle in Rushford, Fillmore County.

Always especially interested in ophthalmology, otology, rhinology and laryngology, Dr. Richardson in 1912 took postgraduate work in these special fields at the Chicago Policlinic and at the Chicago Eye, Ear, Nose and Throat College and Hospital in 1918. In Rushford, with offices in his residence and with the facilities of the Winona General Hospital available to him, he has been in general practice, placing special emphasis on the diagnosis and treatment of diseases of the eye, ear, nose and throat.

During World War I Dr. Richardson was a captain in the Medical Corps of the United States Army, attached to Base Hospital No. 99, American Expeditionary Forces. He is a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State Medical Association and the American Medical Association, attends the Presbyterian Church and is a member of all Masonic bodies. When questioned as to his favorite hobby, Dr. Richardson wrote, "My family."

Walter E. Richardson was married on June 18, 1902, to Fatima Whitney, of Slayton, Minnesota. The four children of Dr. and Mrs. Richardson are

Ursula (Mrs. F. C. Eustis, of Williams Bay, Wisconsin); Walter Whitney, a high school superintendent at Jeffers, Minnesota; William H., formerly a high school instructor, now with the American Red Cross; and Robert J. Richardson, M.D., who in 1939 on his graduation from the Medical School of the University of Minnesota, joined his father in practice at Rushford. Since the beginning of World War II Dr. R. J. Richardson has been in the Medical Corps of the United States Army; in August, 1941, he received his commission as lieutenant and thereafter he took training at Carlisle, Pennsylvania; in September, 1942, he was promoted to captain at Fort Leonard Wood, Missouri.

Calvin Hubbard Robbins was born in St. Lawrence County, New York, on December 20, 1840, the son of Marcus Robbins and Fanny Hubbard Robbins, American citizens of English descent. Marcus Robbins, a native of Wadsborough, Vermont, was a farmer and dealer in real estate and at different times he served as postmaster at Massena, New York, and as customs clerk at Ogdensburg; his grandfather was Dr. Marcus Robbins, of Brattleboro, Vermont, and one of his earlier forebears was George Read, a signer of the Declaration of Independence. Fanny Hubbard was born at Massena, New York, and became a teacher; she was a descendant of Theophilus Eaton, the first governor of Connecticut. Mr. and Mrs. Marcus Robbins were the parents of five children: Marcus, Frederick, Herbert, Hortense and Calvin.

In 1859 Marcus and Fanny Robbins came with their children to southern Minnesota, to settle in Fillmore Township of Fillmore County. Their son Calvin, who had begun his education in the public schools of Norfolk, New York, continued his studies at Fillmore and Chatfield, completing the available courses, and for a year or two after finishing his academic schooling he taught in the rural schools of the community before entering on three years of medical study in the office of Dr. Luke Miller, of Chatfield.

Calvin Robbins' medical study was interrupted by his enlistment in the Fifth Minnesota Volunteer Regiment for service in the Civil War. There exist two handwritten memoranda over the signature of Oscar Malmros, Adjutant General during the administration of Governor Alexander Ramsey, of which the first, dated at the Adjutant General's Office, Saint Paul, on October 15, 1863, notified Calvin H. Robbins as follows: "The Governor having appointed you Lieutent-Colonel [sic] of the 5th Reg. M. S. M. your Commission will be countersigned and immediately forwarded upon your subscribing the enclosed oath of office, and filing the same in this office." The second memorandum, Special Orders No. 135, dated on October 29, 1863, read thus: "The resignation of First Lieutenant [sic; no doubt correct] Calvin H. Robbins the 5th Reg. M. S. M. is accepted to enable him to accept a field office in the Regiment, said resignation to take effect from the 26th day of October, 1863." As it happened, he was taken ill en route to join his regiment and was released from military duty, his certificate of release being signed by Dr. W. W. Mayo, of Rochester, surgeon on the Board of Enrollment of the First Congressional District of Minnesota.

In October, 1864, within a year of his release from the army, Calvin Robbins enrolled at the Medical School of the University of Michigan, in Ann Arbor; in November of 1865, however, he transferred from Ann Arbor to the Medical College of Keokuk (Iowa), sometimes, as early as 1884, designated "The Medical Department of the University of Iowa," from which he was graduated in 1866. Long afterward, there was found among his effects a copy of the twenty-third annual announcement of Rush Medical College, for 1865-1866, perhaps evidence that he had considered matriculation at that school in his final year. At Keokuk his preceptor was Professor E. J. Gillett, M.D., D.D.; the title of his final thesis was "Acute Rheumatism." At that time, in some of the medical schools, and the Medical College of Keokuk was one of them, the faculty determined by vote which students should be graduated, the decision being based partly on the students' scholastic records. Only two in Dr. Robbins' class received more votes than he, and they were men who had had five years of combined training and actual medical practice when they entered the college.

In the year of his graduation, 1866, Dr. Robbins began the practice of medicine in the village of Fillmore and became a charter member of the Fillmore County Medical Society, which was organized in October of that year. In November of the same year he was married to Rosalia R. Mosher, a teacher, formerly of Canton, New York. In Fillmore Village Dr. and Mrs. Robbins made their home for the ensuing nine years. Their five children, all natives of Fillmore County, were Hortense R., Marcus P., Fanny E., Gertrude A., and Calvin Eaton.

Although surgery was his preferred field, Dr. Robbins' practice was necessarily general. In 1870 his professional card in *Western Progress*, published in Spring Valley, announced him as physician and surgeon. And that he endorsed vaccination against smallpox is evident from a Fillmore news item in the same newspaper in March, 1873: "We had a little flurry about smallpox a few days ago, but we guess the danger is past. 'Call' [sic] has been around jabbing his knife into folks generally." Of his activities, professional and nonprofessional, an extract from his diary of 1874 gives various testimony:[*]

Jan. 17	Operated for cancer on ————————.
Feb. 9	Gave chloroform to ———————— for Kellogg.[**]
Feb. 23	Subscribed for Harper's Magazine.
Mar. 2	Started the supervisor's report in the evening.
Mar. 10	Attended election. Got 108 votes to D. H. Hoff's 44 for chairman Board of County Commissioners.
April 7	Bought 4½ cords of wood of Marve Eggleston @ $3.25 a cord.
April 9	Got 20 bushels of oats @ $.40=8.00. The boys went after horse thieves in the evening.
April 14	Went to ————————'s to attend his wife. *Head* and *arm presentation.* Everything all right.
April 24	Received $3.00 from town for fees as supervisor.
April 26	Got ½ pint of *Female tonic* for ————————'s wife (at Wykoff).
May 21	Met Dr. Ross [John A. Ross, of Preston] at ————————'s and performed a craniotomy on child to deliver the woman.
June 2	Met on town board to view the bridge. Resolved to build a new one.
June 12	Met on town board. Gave job to build bridge to H. B. Stewart for $174.
June 23	Went to Spring Valley and bought P. O. order for the New York Sun.

In 1875 Dr. Robbins moved from Fillmore to Wykoff, a larger village a few miles north in the same township, on the railroad and then in the period of its greatest prosperity, and there in the next twenty years his interests of all types continued to widen. In Wykoff he owned his home, as he always did wherever he lived, and in addition to his practice operated a drugstore; in later years he was certified as a registered pharmacist. After 1878, when Dr. James H. Phillips settled in the village, Dr. Robbins took the younger man into partnership with him in the drug store and in general practice, an association which continued until Dr. Phillips removed to Preston in the early eighties.

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[*] The names of patients have been deleted by the writer.

[**] Evidence has not been found that a Dr. Kellogg resided in the county. This perhaps was Dr. D. W. Kellogg, surgeon-dentist of Decorah, Iowa, who at intervals made professional trips to Preston and other points in the county; "all work done in the most skillful and artistic manner."

In 1871, while in Fillmore, Dr. Robbins had become a member of the Minnesota State Medical Society; in 1874 he was one of the seventeen physicians in the state who responded to the request of the Committee on Practical Medicine regarding the effect of the climate of the Northwest on asthma, and he "reported two cases not affected by ten years' residence." In succeeding years he was appointed a member of the Committee on Finance in 1879, and of the Committee on Obstetrics in 1883. After the passage of the act of 1883 to regulate medical practice in the state, Dr. Robbins received certificate No. 550 (R) given on December 31, 1884. And also during the period of the eighties (1886 and later) he was a member, with Dr. J. H. Phillips and Dr. G. A. Love, of the board of examining surgeons for the Bureau of Pensions of Fillmore County.

A good citizen, friendly and well-disposed, he served the community in various civil capacities. Politically he was at first a Democrat-Republican, but later became a staunch Republican and as such, on one occasion, served as chairman of the Fillmore County Republican Convention. In the early seventies he was a member of the Board of County Commissioners and of the "town board." In 1876 he was elected a representative from his district to the state legislature. He was a member of the Methodist Church and of several fraternal organizations, among them the Masons (A. F. and A. M.), Independent Order of Odd Fellows and the Benevolent and Protective Order of Elks.

In those years of long country drives Dr. Robbins owned a number of horses in which he took great pride, blooded Morgans, superior lightweight American-bred animals that were noted for their speed and endurance on the road. The ability to drive widely through the countryside not only extended his professional interests but also furthered his most absorbing avocation, the study of geology, especially paleontology. In a territory that has been well called a geologist's paradise, he was enabled to observe interesting formations and to collect fossils, and so intelligent was his research that in the nineties it brought his name into the section on paleontology of the official geological and natural history survey of Minnesota, conducted by the University of Minnesota. When Newton H. Winchell, State Geologist, and his colaborers, Wilbur H. Scofield, Edward O. Ulrich, John M. Clarke and Charles Schuchert, in carrying on the survey of the lower Silurian deposits of the Upper Mississippi Province, were in the locality of Wykoff, they received unfailing courtesy and much practical help from Dr. Robbins. From his private collection he lent them rare and unsurpassed specimens of various fossil Crustacea, and in his honor they gave the name *Platymetopus robbinsi* to a genus of trilobite found in the middle beds of Galena limestone and the name *Trochonema (Eunema) robbinsi* to a genus of gastropod discovered in the Fusispera bed, both sites near Wykoff. Mr. Schuchert, furthermore, in the spring of 1892 took some of Dr. Robbins' collection east with him for the Peabody Museum of Yale University. Many of Dr. Robbins' rare specimens are now in the possession of his grandson, Richard Robbins Crandall, of La Canada, California, a geologist and an alumnus of Leland Stanford University.

In 1895, temporarily discontinuing the practice of medicine, Dr. Robbins moved to Spencer, Iowa, where for two years he owned and managed the *Spencer Reporter,* taking especial pleasure in writing political articles for publication in that paper. By 1898 he had left the newspaper field and had settled in Austin, Mower County, where he again successfully followed his profession of medicine and where he was known as "a gentle and courteous physician of the old school."

Dr. Robbins died in Austin on February 28, 1900, from angina pectoris. His brother Marcus, of Grants Pass, Oregon, and his sister Hortense (Mrs. McKinney), of Chicago, had died previously; his brothers, Herbert, of Oakland, and Frederick, of Pomona, California, lived more than thirty years after him. Mrs. Robbins survived nearly forty years; she died on July 19, 1939, at the home of her daughter, Mrs. S. C. Schmitt, of Los Angeles. In 1943 two of the five children were living: Fanny, wife of Dr. Samuel C. Schmitt, of Los Angeles (Fanny Robinson Schmitt died on September 21, 1943); and Calvin Eaton, a salesman, of Berkeley, California. Those deceased were Marcus; Hortense, who at the time of her death was principal of the high school at Marshall, Minnesota; and Gertrude, wife of Dr. W. G. Crandall, a dentist of Los Angeles.

In the collections of his daughter, with whom historical and genealogical research was an avocation, are objects of more than casual interest relating particularly to Dr. Robbins' early medical and surgical practice, among them his surgical instruments, his roll of obstetrical instruments, and his old forceps for extracting teeth, for like most physicians of the day he was on occasion dentist as well as physician. Among his papers are two of his internal revenue licenses to sell tobacco, issued at Mankato, one on May 1, 1866, and one on April 28, 1888, and worthy of note, his diaries, full of information.

John Angus Ross, a native of Scotland, was born in Ross Shire, the Hebrides Islands, on June 14, 1841. His mother was twice married. Of the first marriage, to Mr. Frazier, there were two children, a son Dan and a daughter Ann; of the second marriage, to Mr. Ross, three daughters, Lexie, Isabel and Jessie, and one son, John Angus.

John A. Ross received his early training near home and his formal education in medicine and related sciences at the Universities of Glasgow and Edinburgh, from one of which he was graduated in medicine and chemistry. Of his coming to the United States little is known except that he first was established in Atlanta, Georgia, perhaps having landed at Savannah, and that he undoubtedly was the bearer of letters of introduction which gave him entree to the long-established homes of Atlanta, including that of the governor of the state, whose daughter was gracious to the young Scotch physician. Dr. Ross arrived in the South in the troubled period just before the outbreak of the Civil War and when the crisis came he served the Confederate cause in one of the military hospitals. Shortly after the close of the war he left the South for the Middle West and in Chicago continued his scientific study at Rush Medical College.

The coming of Dr. Ross to Preston, Fillmore County, in early October, 1869, is of itself an interesting story. Dr. LaFayette Redmon and Dr. O. A. Case, the established physicians of the village, in the course of changing conditions of practice found it expedient to improve their professional knowledge—so runs the reminiscence of one who knew the circumstances well—and were about to go back to school. A request to Rush Medical College to send Preston a first-class physician was answered by the arrival of Dr. John A. Ross. Educated in the best medical schools of Britain and America; tall and fine looking, with clear blue-gray eyes, wavy brown hair brushed back from the temples and up from the broad forehead, a mustache and a small flowing beard, narrow and short, that did not conceal the strong lines of the jaw; carefully groomed, and dressed in the formal costume he always affected: a fine broadcloth suit with velvet vest and double-breasted coat and a deep-bosomed white shirt, worn with three studs, stiff collar and dark tie; wearing a high hat and carrying a beautiful mahogany cane, Dr. Ross was a new type in the settlement that was made up for the most part of rugged pioneers. His cane, presented by fellow physicians in Chicago at a banquet given in his honor just before his departure for Minnesota, had an ivory handle and bore a gold band that was inscribed in commemoration of the occasion and in token of his excellent scholastic record. Perhaps the form of the gift was inspired by the tradition of the gold-headed cane of Dr. John Radcliffe (1650-1714); perhaps a cane was merely the currently favored accessory of a dignified young physician accustomed to urban life.

In Preston Dr. Ross was well received. From the first the many Scotch settlers in the community "loved him to death and would not let him leave," and he soon won the confidence of all, regardless of nationality or religious belief. The parish priest within a short time instructed his parishioners to call only Dr. Ross, for the reason, again a comment in reminiscent vein, that certain other physicians made mistakes as to their patients' tenure of life and caused the priest to administer extreme unction unnecessarily. Dr. Ross, skilled in diagnosis and prognosis, made few errors. If he considered that there was hope of pulling a patient through, he would not leave until the outcome was sure, remaining several days if necessary; if he was convinced that the case was hopeless, he would not waste time but would go on to some one who could be helped, and it is remembered that his judgment was sound and that it was honored.

On May 3, 1869, before Dr. O. A. Case had gone to further his medical education, as has been told, Dr. Case and a few other local practitioners organized the Fillmore County Eclectic Medical Society in Preston, and of this group Dr. Ross soon after his arrival became an active member. For several years he was its secretary and in 1876 served as vice president; by that time the activities of the society were dwindling and soon after the association disbanded. There is no reason to wonder why a man of Dr. Ross's training at the medical schools of Glasgow, Edinburgh and Rush and therefore ostensibly of the regular school of medical thought, should have allied himself with an eclectic medical group, especially when the Fillmore County Medical Society, founded in 1866, was functioning.

In the interest of his profession Dr. Ross, in addition to identifying himself with medical organization, early began his life-long custom of writing for medical journals and also acted as preceptor. In 1870 he took into his office as a student, George A. Love, who was preparing for matriculation at the Bennett Eclectic College of Medicine and Surgery in Chicago. There is an interesting note from the *Preston Republican* of May 30, 1873, that Dr. Ross, assisted by Dr. H. Jones, in the presence of Mr. Love, a medical student, performed a postmortem examination; an infant daughter of local people had died of cerebrospinal meningitis. "The facts disclosed by the postmortem examination warrant us in saying that the parents, by overcoming the usual prejudice, did the public and medical profession a great service by permitting it to be done." In 1874, when Dr. Love was graduated, he returned to join Dr. Ross, as stated previously, in a partnership that was to last two years. The following card appeared in the *Fillmore County Republican* of January 8, 1875:

> Ross and Love, Physicians and Surgeons, Preston, Minnesota.
> Office on Main Street Just in rear of post office.
> Open day and night. All calls promptly attended to.

Dr. Ross took a friendly as well as a professional interest in his community, entering into social and civic activities and joining fraternal organizations, among them the Masons (A. F. and A. M., Royal Arch Chapter No. 32) and the Independent Order of Odd Fellows.

The life of this well-endowed physician of great promise was tragically short. In 1877, after two years of disability and suffering from heart disease, Dr. Ross died in Preston at the early age of thirty-six years, leaving his young wife; there were no children. He had been married two years previously, on March 5, 1875, after a romantic courtship, to Julia Ann Kaercher, the daughter of John Kaercher, a leading citizen of Fillmore County, in Fillmore, Chatfield, Preston and Clear Grit (which he founded). In later years Julia Kaercher Ross was married to Mr. Dibble; there were two children of the marriage, Sarah and Arthur, of whom the latter became a lawyer. After the death of her second husband she was married to Dr. Hickman. Of the third marriage there were four children; a son, Beryl, who died in infancy, and three daughters, Lola, Rachel and Ruth. Ruth Hickman Campbell has named her son John Angus, in honor of John Angus Ross.

In the histories of Fillmore county published in 1882 and 1912, tribute was paid to Dr. Ross as an esteemed and valuable citizen of Preston who was known for his kindness and liberality. "He was honest, plain-spoken, open-handed and just."

(To be continued in November issue)

President's Letter

LOCAL HEART ASSOCIATIONS

Until June of this year, the American Heart Association was an organization composed of physicians whose chief purpose was the study and dissemination of knowledge among physicians concerning the science of cardiology and the treatment of cardiovascular disease. It had conducted an annual scientific meeting each year in conjunction with the American Medical Association and had published *The American Heart Journal.* During recent years it had become apparent to the officials of this organization that the problem of diseases of the heart and blood vessels must be attacked on a much greater scale and, finally, at meetings at the various local heart associations, then established, in San Francisco in June, 1946, it was decided to enlarge the aims of the American Heart Association greatly and to revise its administrative structure completely. A committee was authorized to prepare a new constitution and to present it to the Board of Directors at the meeting of the American Heart Association which was to be held in Atlantic City in June, 1947.

When the American Heart Association met this year, the new constitution and by-laws were adopted. Now, the governing board of the American Heart Association is known as the "Assembly" and it consists of not more than 150 members. Of this number, not more than half may be individuals who are not physicians. It is provided that for purposes of representation the United States and Canada will be divided into six geographic regions and seventy-five members of the Assembly will be chosen "on a regional basis." Members of the Assembly who are physicians and members who are not physicians will have an equal voice when policies of the Association are being determined. Groups of physicians interested in special phases of cardiovascular disease, such as peripheral vascular disease, hypertension and arteriosclerosis, will be accorded representation in the Assembly. For example, it is provided that five members of the Assembly shall be elected by the American Council on Rheumatic Fever.

In order to implement the activities of the national body, it was decided that local heart associations should be formed throughout the country as rapidly as possible. The American Heart Association prefers that these local units be organized on a statewide basis and that subdivisions be created in each state in accordance with existing facilities and needs. Many such local heart associations are being formed throughout the country and hereafter membership in the American Heart Association will be obtained through membership in the local heart associations.

The over-all objective of the American Heart Association is to mobilize all resources, on a national scale, in an attempt to combat diseases of the heart and blood vessels more effectively. In order to accomplish this purpose, the national organization formulated certain definite plans. The public must be educated concerning the prevalence of diseases of the heart and blood vessels. It must be informed concerning prevention of heart disease and concerning the treatment and management of those who become its victims. It must know enough about the symptoms of heart disease to be able to consult physicians early. Research must be fostered, and in order to sponsor research money is needed. A tragically small amount has been spent heretofore in research. Because of the need for money to accomplish the plans including the promotion of research, it is proposed that a national campaign for funds will be made during the week of Saint Valentine's Day in February, 1948. That week of each year will be designated as "Heart Week" and during it nationwide publicity will be sought through the radio, newspapers, magazines, motion pictures and other publicity mediums. The American Heart Association calls especial attention to the fact that a "very high percentage" of the funds which are raised will be retained by the local associations for the purpose of promoting research and providing facilities for treatment and management of patients suffering from heart disease in the various localities.

An important function of the local associations will be the education of the lay public. They will show that some forms of heart disease are reversible; others can be arrested and many individuals suffering from heart disease can lead useful, comfortable and fairly long lives, despite their physical limitation. This information will be released through lay educators, such as teachers, physical education instructors, social workers, public health nurses and ministers. Physicians will receive advanced instruction by means of refresher courses and lectures by outstanding authorities. Also the local heart associations will stimulate communities to provide an adequate number of beds for patients who suffer from acute and chronic phases of heart disease. They will see that sufficient nurses and physicians are available. They will provide for the rehabilitation of patients who have heart disease. This phase of their activities will require the assistance of occupational therapists and vocational guidance and often psychologic rehabilitation will be needed. The local heart associations have been termed the "task forces in this crusade" of the American Heart Association.

In Minnesota much interest has been shown by the American Legion, and farm, labor and industrial organizations. The Variety Club has provided funds for a heart hospital on the campus of the University of Minnesota.

The Council of the Minnesota State Medical Association has approved the organization of the Minnesota Heart Association. Temporary officers were elected at a meeting of representatives of industrial, labor and farm organizations and members of the medical profession, held in Saint Paul on July 24. These officials are preparing articles of incorporation and a constitution and by-laws at this time which will provide for statewide representation drawn from members of the medical profession and persons who are not physicians. Soon a permanent organization will be established.

Probably one of the prime functions of this organization will be to enlighten the public regarding the significance of this program. Soon people will be made to realize that one out of three people dies of diseases of the heart and blood vessels and that these diseases account for more deaths than the next six greatest causes of death. It should not be difficult to arouse public support for this outstanding health program.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* **George Earl, M.D., Henry L. Ulrich, M.D.**, *Associate Editors*

ACRES OF DIAMONDS

IN the October number of *Pic* appears in full the famous lecture entitled "Acres of Diamonds,"* first delivered years ago at the reunion of Civil War comrades by Dr. Russell H. Conwell, the philanthropist and founder of Temple University in Philadelphia. This inspiring lecture is said to have been delivered over 6,000 times and to have been a source of inspiration to countless individuals who have heard it.

The title is derived from a story told Dr. Conwell in 1870 by a guide on the Euphrates River about a Persian who left his home on the River Indus in a vain search of wealth, when the bed of the stream that flowed in his own yard was covered with diamonds. This is his thesis—that wealth is at your doorstep in this free country of ours and is the reward of the industrious and deserving. He decries the idea that there is something iniquitous in the search for wealth and points out that, according to the Bible, "the *love* of money is the root of all evil" and not money itself. With the acquisition of money comes the power to do good—for your family, friends, community and the world in general. He decries anything that stands in the way of the development and reward of private initiative, be it employer or union, which by standardization of wages prevents compensation commensurate with one's worth.

Apparently, there was a need for such an inspirational speech over the period of years during which Dr. Conwell gave this "Acres of Diamonds" speech. He died in 1925. During these years, Americans with freedom and opportunity, some spurred on by this speech, attained undreamed wealth for themselves and their countrymen. Has this period come to an end?

We have heard of pessimists who as far back as a hundred years ago predicted that no longer could wealth be acquired in our country, only to be proven wrong. We do not wish to be added to the list.

We believe that the present supplies many opportunities for acquiring wealth on the part of those with industry and faith in the future. We maintain, however, that man-made barriers in recent years have removed much of the incentive that was formerly present. The widening of the field of government spending before the war, greatly increased of necessity during the war, and new fields which have opened to replace those contracted during the postwar period—some necessary in the name of humanity, some indicative of the socialistic trend in government and some gross extravagance—have necessitated such an increase in income and inheritance taxes and have resulted in such poor returns from investments that the money incentive to increase production is well nigh gone.

We wish everyone could read "Acres of Diamonds" in order to experience the exhileration it produces in the reader's soul to think that he lives in a country like ours, so rich in opportunities. Certainly, patriotic and thoughtful readers cannot fail to feel that everything must be done to maintain our system of private enterprise in spite of socialistic tendencies in the rest of the world to restore the incentive to work by reducing taxation and government spending. If the country goes to work, supply will more nearly meet demand, and the cost of living will begin to go down, to the benefit of everyone. Concealed or obvious taxes are contained in the cost of everything we purchase today.

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*The lecture plus the story of Dr. Conwell's life was compiled into book form by Harpers.

AMA FELLOWS

POSSIBLY one in ten physicians in the state understands clearly the difference between being a member of the American Medical Association and being a Fellow in the Scientific Assembly of the AMA. Each active member of a county society is enrolled automatically as a member of the AMA. He pays county and state dues but pays no dues to the national organization. Although the AMA has the right, according to its constitution, to assess each member up to ten dollars, if necessary, this prerogative, to our knowledge, has never been exercised. The AMA derives its income largely from its publications and the commercial displays at its meetings.

It is, therefore, logical for the AMA to insist that only those who support the scientific activities of the Association by subscribing to *The Journal of the American Medical Association* or one of its publications and becoming enrolled as a Fellow can register or take part in scientific discussions at the annual meetings. Simply being a member, with or without subscribing to an AMA publication does not automatically make one a Fellow. Application for Fellowship must be made by members who are not already Fellows as attested by the Fellowship card received yearly from the AMA. Fellowship dues, in the sum of eight dollars, should accompany the application. This amount includes the subscription price of *The Journal.*

Perhaps 20 per cent of members of the Minnesota State Medical Association are not AMA Fellows. Some of these subscribe to *The Journal* and can become Fellows without additional expense by simply applying to the AMA. Those who do not subscribe to one of the AMA publications should support the national association by so doing and should become Fellows.

Aside from qualifying a member to register at an annual AMA meeting, there are certain additional advantages to being a Fellow. In case one moves to another state, a Fellow is eligible to membership in the component society of his new location on presentation of a transfer card. If, however, he does not join the association in the state to which he moves, he forfeits his AMA Fellowship. One who has been a Fellow for fifteen years, has reached the age of sixty-four and is an honorary member of his component society, or the equivalent whereby he does not pay dues, may be elected to Affiliate Fellowship in the AMA by the House of Delegates. As an Affiliate Fellow he will not be required to pay dues; neither will he continue to receive the journal, except upon paid subscription.

A PHYSIOLOGIC APPROACH TO CARDIOVASCULAR ROENTGENOLOGY

(Continued from Page 1048)

A. Gordon; Drs. S. Dack and D. Paley; Drs. F. H. King and B. Schwartz; Drs. A. Grishman and M. F. Steinberg; Dr. S. Feitelberg and Mr. J. Hay.

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

RISKS OF ADMINISTERING BLOOD PLASMA

Possibilities of disease transmission by the injection of human blood derivatives is re-emphasized in a recent report from the American Red Cross.

The report, released through the Minnesota Department of Health, comes from the Committee on Blood and Blood Derivatives of the American National Red Cross Advisory Board on Health Services, which recently reviewed accumulated reports on the administration of surplus dried blood plasma.

Although the Committee does *not* advocate the discontinuance of its use, it does recommend that all physicians consider carefully the potential risk to the patient in the administration of pooled plasma. Because of the possibility of disease transmission, plasma should be used chiefly for serious emergencies, the report says, when a need for it is clearly indicated and when safer agents such as whole blood or serum albumin are not available.

No Other Restrictions

There are no other restrictions on the use of dried human blood plasma. This plasma, derived originally from blood given by thousands of donors throughout the country, to help in the war emergency, has been returned as surplus to the American Red Cross. By agreement with the American Medical Association and the Association of State and Territorial Health Officers, it has been distributed to all state health departments for use in this country.

No longer needed for soldiers and sailors, this plasma is now intended to help save the lives of the people who so generously gave blood originally. It is available to all who request it, as long as it lasts. No charge is allowed for the plasma itself; and to avoid confusion, the Health Department suggests that hospitals might bill patients as follows:

Blood plasma—No charge
Plasma administration—(Prevailing fee)

The plasma is not intended solely for administering to indigents; nor is it to be kept in reserve for disasters. An ample reserve has been set aside for both of these purposes.

15,829 Units Distributed

Since March, 1946, the Minnesota Department of Health had distributed a total of 15,829 units of dried human blood plasma to physicians and hospitals throughout the state. Approximately 11,481 units of 500 c.c., and 4,348 units of 250 c.c. have been supplied between March, 1946, and August 1, 1947.

Co-operation of physicians is urgently sought both in reporting cases of disease apparently spread through plasma administration and in preventing any further spread.

According to the Red Cross Committee, physicians who see patients with hepatitis should make a habit of inquiring about the possibility of their having been injected with blood or its derivatives during the preceding six months and of reporting such cases to the state or territorial department of health.

Furthermore, the Committee recommends, no matter how well a person looks or feels, he should *not* serve as a blood donor if (1) he has been hospitalized during the previous six month, particularly if he has received injections of human blood, blood plasma or serum within that period and if (2) there is a history of jaundice among members of his family or household within the preceding six months' period.

SOCIAL SECURITY MISSION TO JAPAN QUESTIONED

Motives prompting the dispatch on August 28 of certain officials from the Federal Security Administration and the U. S. Public Health Service to Japan "to advise the Japanese government with reference to the co-ordination and application of social security measures" are under heavy fire in Washington.

The big question being asked is this: Does this social security mission to Tokyo represent simply a response to a normal request from the Supreme Command for the Allied Powers in Japan for help in rebuilding the Japanese Government on a sounder basis, or is it an attempt to "put over" a socialistic system in that country?

This question is being posed by the same investigating subcommittee which, under the guidance of Representative Forest A. Harness (Republican, Indiana), recently uncovered a misuse of funds by six agenciees of the executive branch of the U. S. Government for propaganda activities supporting compulsory national health insurance.

Defenders of the mission to Japan maintain there is a very simple explanation for the whole procedure. It all began, they relate, with a request last April from General Douglas MacArthur, Supreme Commander for the Allied Powers, that Mr. Arthur J. Altmeyer, Commissioner of the Social Security Administration, be invited to head a six-man mission to Japan for a period of thirty to ninety days to evaluate and make recommendations for achieving a sound social security system for Japan.

To Help Draft Health Bill

These men are to consult with the Public Health and Welfare Section of the Occupational government (the SCAP) and will offer technical guidance to the Japanese Committee on Social Insurance and the Japanese Council on Medical Care, presently engaged in drafting a co-ordinated national health bill.

Apparently General MacArthur did make this request, although the Harness Investigating Committee insists that they have never seen such a request. What arouses suspicion is the fact that the persons being sent to Japan by the War Department are merely, in the General's own words "presumed to be qualified" since they are "responsible public officials."

This fact has prompted the Harness Committee to probe further into their backgrounds. Each man who will work with Altmeyer is known, according to the Harness Committee, to have an "ideological attachment" to a national health program of the Wagner-Murray-Dingell type. The inference from this is that they were picked for their political convictions and not for their professional competence as health or social security advisers.

Four members of the mission have already been flown to Japan by the War Department. Mr. Altmeyer and two other men will join them later. The advance guard includes Dr. Joseph W. Mountin and Mr. Burnet M. Davis of the U. S. Public Health Service; Mr. Barker S. Sanders, Social Security Administration, and Mr. Francis A. Staten, Public Housing Authority.

See Danger to Medicine

The Harness Committee sees imminent danger in this social security mission, pointing out that if it is carried through, it may establish a precedent for controlling the medical profession in other countries. The selection of the experts by persons known to favor the nationalization of medicine leads the Committee to suspect an attempt is being made to find a "likely spot" to plant the seeds of a socialistic system in view of the fact that such plans have so far failed in this country.

The Committee doubts that MacArthur had any real knowledge of the composition of the mission or of the reputation of its members. It may be that he was guided by recommendations from the War Department, which may in turn have been guided by someone else—someone with strong socialistic leanings. Such is the contention of the Investigating Committee. For this reason, the Committee requested that the departure of the mission be delayed pending further investigation. The request was denied, and the mission left as scheduled.

AMA "GRASS ROOTS CONFERENCE" HAILED AS DECIDED SUCCESS

The first national meeting of county medical society officers, held in connection with the AMA Centennial Convention in Atlantic City, has been hailed as a decided success. The conference, which has been aptly named the "Grass Roots Conference," has been accorded the wholehearted approval of the AMA House of Delegates, and a continuation of these conferences has been recommended.

Employing the question-and-answer method of discussion, with the county officers themselves supplying the questions, delegates exchanged ideas on a variety of medical economic subjects. A panel of experts was on stage to provide facts in answer to the specific questions and to keep the discussions going.

The enthusiasm shown by the delegates and their active participation in the discussions resulted in the coverage of only seventeen major questions from a list of seventy-eight submitted by the county officers.

Receiving most attention were the questions dealing with rural medicine, with the status of the general practitioner in relation to the hospital and the specialist, and with the public relations of the county medical society.

Discuss Physician Shortage

The shortage of physicians, particularly in the rural areas, it was agreed by the delegates, is a number one problem, the remedy of which is the dual responsibility of the public and the profession. The growing interest on the part of rural people to do something about it was noted, together with the firm resolve of organized medicine itself to do its share, by Dr. L. W. Larson of Bismarck, a member of the panel by reason of his work on the AMA Committee on Rural Medical Service.

"Medical schools," Dr. Larson pointed out, "have emphasized specialization in the years past, but there is now evidence to show that the trend is swinging back to more emphasis on the general practitioner. The tendency on the part of the larger rural hospitals to extend their facilities to surrounding territory is also in the right direction."

None of these things alone will solve the problem, he said. He expressed the belief that doctors themselves can do something within the county medical societies in rural areas, and he recommended that physicians help encourage bright young men who might be interested in medicine to get into the field and to settle in rural areas. The county medical society might also foster the development of local health councils in the county. Still another suggestion was the offering of practical help to the rural practitioner—that of making him feel that he, too, is important and that he has friends in the larger centers who stand ready to give him whatever advice or consultation he may need.

Dr. Norman M. Scott, medical director of the New Jersey Medical Surgical Plan, also a panel member, cited another problem particularly applicable in rural areas, that of rural enrollment in prepayment medical care plans. His conclusion was that since such insurance is most successful when written on the group basis, that the solution for the spread of these plans in rural areas is to organize farmers into groups.

Preserve the Family Doctor

If we do not protect the status of the general practitioner our whole system of organized medicine is threatened. This statement was made by Dr. L. H. Bauer of Hempstead, N. Y., during the discussion of the specialist-general practitioner relationship, and it seemed to summarize the feeling of the entire group.

Various ways of preserving "the family doctor" were discussed. Suggestions included increasing hospital facilities to make general practice easier, revamping specialty boards, the establishment of general practice services in hospitals and increasing the number of postgraduate courses, slanted toward the needs of the general practitioner.

Indicative of the line of thought of the conference delegates were such statements as: "Hospitals are for the use of and not the convenience of the specialist"; "The general practitioner has no fight with the specialist—we need him as much as he needs us"; and "Credit should be given on the basis of proved ability to practice."

Some doctors objected to the name "general practitioner," advocating such titles as "general physician" or a return to the name "family doctor." The question of a specialty board for general practitioners was also brought up, but there was disagreement as to need for such a board or the advisability of it, since the original idea of a specialty board was not to make it difficult for a man not in a specialty, but to arrive at comparable standards for different specialties. To avoid unhappiness in the profession from inequality of opportunity, the House of Delegates has already recommended and the Hospital Association has accepted this statement as a guide in the matter of the specialty board: "The individual shall be qualified for a particular place by reason of his particular training and not because he has been certified by a board."

Public Relations Discussed

The proper share of public relations activity which should be assumed at the county society level provided a subject for very active discussion at the Conference. A member of the panel, Dr. L. F. Foster, secretary of the Michigan State Medical Society, cited the development of social consciousness as an important consideration. The rugged individualism, typical of the medical profession, is being discarded, he said.

"Doctors are, in the eyes of the patients, great fellows," Dr. Foster said. "But these same patients seem to feel that medical associations exist for the doctors' own good and not to help the public. But as a corporate institution we are concerned with public welfare and must get this across to the public."

Mr. Thomas A. Hendricks, secretary of the AMA Council on Medical Service, a firm believer that "public relations begin at home," listed for the delegates what he called "the seven sins" to be avoided by a functioning local society: "inertia, reaction, cliques, discord, provincialism, smugness and defeatism."

"To offset these," he said, "the seven characteristics that mark a good medical society are: enterprise, progress, friendship, harmony, vision, leadership and courage."

PNEUMONIA IMMUNIZATION CUTS DEATH RATE OF OLDER PERSONS

A group of New York investigators who made a six-year study of pneumonia in elderly patients, suggest immunization against the disease where high incidence rates prevail, as in epidemics, in institutions, and in persons with a tendency to recurring pneumonia.

Writing in the current issue of the *Archives of Internal Medicine,* published by the American Medical Association, the investigators—Paul Kaufman, M.D., attending physician, Goldwater Memorial Hospital and New York City Home; C. O'Brien, M.D., resident physician and H. Stein, M.D., resident physician, New York City Home—state that they undertook their study in the older age group for several reasons:

First, they have a high incidence of pneumonia, mortality and case fatality rate. Second, repeated attacks of pneumonia occur frequently. Third, there was possibility for continuous observation, hospitalization, and re-examination, since the patients were from the New York City Home and the Medical Division of the former Central and Neurological Hospital and the Goldwater Memorial Hospital, where higher age groups are treated.

During the six-year study, 1937 to 1943, 5,750 patients were immunized against pneumonia, while 5,153 control patients were observed for comparison. Among the immunized group, 99 developed pneumonia, an incidence rate of 17.2 per 1,000, of which 40 died, a mortality rate of 6.2 per 1,000. There were 227 cases of pneumonia among the nonimmunized patients, an incidence rate of 44 per 1,000 with 98 deaths, a mortality rate of 19 per 1,000.

The antigen used in these experiments for immunization is made from a fraction of the pneumococcus, the organism responsible for pneumonia. The antigen, which incites production by the body cells of a substance to fight the bacteria, is a polysaccharide.—*American Medical Association News,* July 11, 1947.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. Dubois, M.D., Secretary

Elkton, South Dakota, Man Sentenced to Three-year Prison Term for Abortion

Re. State of South Dakota vs. Herman V. Feenstra

On August 19, 1947, Herman V. Feenstra, seventy-three years of age, of Elkton, South Dakota, entered a plea of guilty in the Circuit Court at Brookings, South Dakota, to a charge of performing an abortion. Feenstra was sentenced to a three-year-term in the South Dakota State Prison, and is to receive credit for three months that he was confined in the Brookings County Jail following his arrest in May of this year.

Feenstra, who formerly represented himself as a chiropractor, was arrested on May 20, 1947, following the hospitalization of an eighteen year-old Lake Benton, Minnesota, girl at the Hendricks, Minnesota, hospital. The matter was immediately called to the attention of the Minnesota State Board of Medical Examiners, and through the splendid co-operation of the attending physicians, it was learned that the patient had gone to Feenstra on May 2, 1947, for the purpose of having an abortion performed. Feenstra inserted a catheter and was paid $50.00 for his services. The patient became seriously ill and was hospitalized on May 9, 1947, in the Hendricks Hospital.

Feenstra is well known to the South Dakota and Minnesota authorities. On August 10, 1938, Feenstra was sentenced to a four-year prison term in the District Court at Glencoe, Minnesota, following his plea of guilty to a charge of criminal abortion. On November 21, 1938, Feenstra was returned to the District Court at Glencoe, Minnesota, from the State Prison, and sentenced to a term of two to eight years because the investigation, at that time, disclosed that Feenstra had a prior conviction in the Circuit Court at Brookings, South Dakota, for a similar crime. The records of the Circuit Court at Brookings, South Dakota, also show that Feenstra forfeited a $2,500 cash bond in that Court, on January 19, 1938, at which time he was under arrest on a charge of rape. Feenstra has resided at Elkton, South Dakota, for the past thirty years. Prior to that time he operated a cafe at Lake Benton, Minnesota. He then worked as a painter, following which he claims that he studied chiropractic at Davenport, Iowa. Feenstra has never held any license to practice any form of healing in the State of Minnesota.

The Minnesota State Board of Medical Examiners wishes to acknowledge the very fine co-operation that it received in this case from the physicians who took care of the patient while she was hospitalized at Hendricks, Minnesota. The Medical Board also wishes to make known the prompt and efficient services rendered by Mr. W. R. McCann, States Attorney, and Sheriff J. M. Rishoi, both of Brookings, South Dakota.

◆ Reports and Announcements ◆

RESEARCH FELLOWSHIPS

The Surgeon General of the U. S. Public Health Service has been authorized to establish and maintain research fellowships intended to promote the training and development of investigators in the field of medicine and related sciences. Between January 1, 1946, and August 31, 1947, a total of $10,214,174 was made available to investigators in twenty-three different study sections. Research in syphilis received $1,669,793; in cancer, $1,241,510; in physiology, $676,836; in biochemistry and nutrition, $682,358; in malaria, $543,208; in virus and rickettsial diseases, $509,556—to cite the largest grants-in-aid.

The sums are devoted to fellowships, ranging from $1,200 to $3,000 per year, awarded to those with bachelor's, master's or doctor's degrees. The fellowships are for one-year periods, but may be renewed.

Application forms for research fellowships may be obtained from the Division of Research Grants and Fellowships, National Institute of Health, Bethesda 14, Maryland. Applications must be supported by a statement from the department head of the university under whom the fellowship work is to be conducted.

MARKLE FOUNDATION POST-FELLOWSHIP GRANTS

The John and Mary R. Markle Foundation, 14 Wall Street, New York City, has announced that grants of $25,000, payable at $5,000 per year for five years, will be available beginning in the school year 1948-49 to accredited medical schools for the specific purpose of aiding embryo research workers in preclinical and clinical subjects. The grants will total $1,250,000 over the five-year period.

The purpose of the program is to meet the need for financial assistance for young medical students who have completed residencies and have the desire and ability to enter research and teaching. Candidates will have had training in some special field to qualify them to receive a faculty appointment and to conduct original research.

The program is the result of a survey which showed that while there are scholarships and other forms of financial aid for the student in the course of his scientific training and for the scientist once his name is made, there are few sources of help at the beginning of the career of the man who chooses academic medicine.

Persons interested in being considered as candidates are referred to the deans of accredited medical schools for further information.

UROLOGY AWARD

The American Urological Association offers an annual award of $1,000.00 (first prize of $500.00, second prize $300.00 and third prize $200.0) for essays on the result of some clinical or laboratory research in urology. Competition will be limited to urologists who have been in such specific practice for not more than five years and to residents in urology in recognized hospitals.

The first prize essay will appear on the program of the forthcoming meeting of the American Urological Association, to be held at the Hotel Statler, Boston, Massachusetts, May 17-20, 1948.

For full particulars write the secretary, Dr. Thomas D. Moore, 899 Madison Avenue, Memphis, Tennessee. Essays must be in his hands before March 1, 1948.

AMERICAN ACADEMY OF ALLERGY

The American Academy of Allergy will hold its annual convention at Hotel Jefferson, St. Louis, Missouri, December 15-17, inclusive. All physicians interested in allergic problems are cordially invited to attend the sessions as guests of the Academy by registering without payment of fee. The program, the scientific, and technical exhibits have been arranged to cover a wide variety of conditions where allergic factors may be important. Papers will be presented dealing with the latest methods of diagnosis and treatment as well as the results of investigation and research. Round table conferences will be held on Monday afternoon, December 15, 1947. Advance copies of the program may be obtained by writing to the chairman on arrangements, Charles H. Eyermann, M.D., 634 North Grand Boulevard, St. Louis, Missouri.

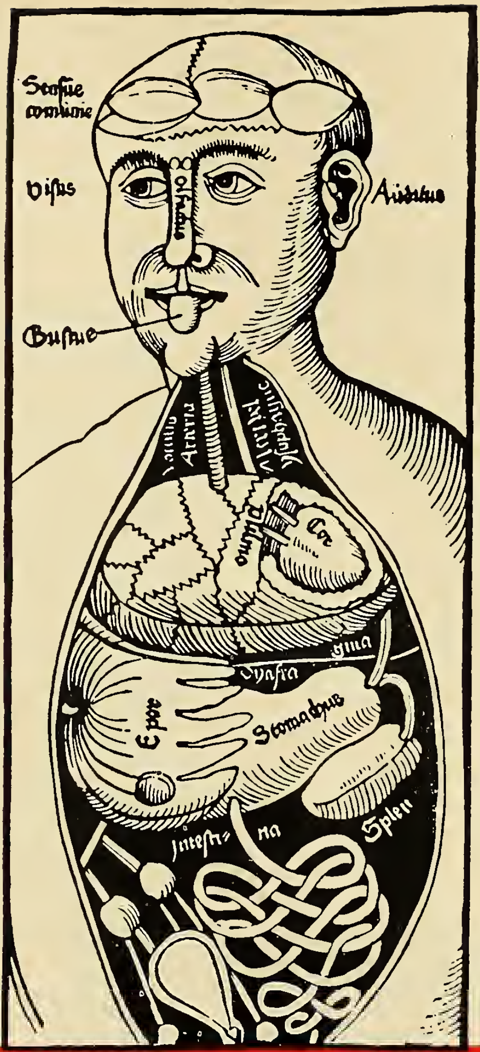
AMERICAN COLLEGE OF SURGEONS

Thirty-two Minnesota physicians were accepted into fellowship in the American College of Surgeons at its thirty-third convocation in New York on September 12.

The Minnesota initiates are Doctors B. Marden Black, Rochester; Theodor E. Bratrud, Thief River Falls; C. Kenneth Cook, Saint Paul; Henry C. Dahleen, Rochester; Charles T. Eginton, Saint Paul; Benjamin A. Gingold, Minneapolis; Gilman H. Goehrs, St. Cloud; Harry P. Harper, Minneapolis; Albert T. Hays, Minneapolis; Gustaf A. Hedberg, Nopeming; Arthur B. Johnson, Minneapolis; Carl E. Johnson, Saint Paul; Edward S. Judd, Jr., Rochester; Leonard L. Kallestad, Brownton; Bernard G. Lannin, Saint Paul; Clarence M. Larson, Minneapolis; Paul R. Lipscomb, Rochester; Donald C. MacKinnon, Minneapolis; Orval L. McHaffie, Duluth; John C. Mickelson, Mankato; Daniel J. Moos, Minneapolis; Harvey Nelson, Minneapolis; Maynard C. Nelson, Minneapolis; Arthur H. Pedersen, Saint Paul; Nathan C. Plimpton, Jr., Minneapolis; Harold A. Reif, Minneapolis; Frank H. Russ, Rochester; Oliver E. Sarff, Duluth; James S. Spang, Duluth; David State, Minneapolis; William B. Stromme, Minneapolis, and H. Herman Young, Rochester.

(Continued on Page 1088)

Anatomic woodcut:
Title page from
Pyligk Compendium;
1516—Courtesy,
The Bettmann Archive


Sēſus cōmunis
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IN 1516:

Anatomic illustrations were crude;
knowledge of the anatomy and the treatment of
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SEARLE RESEARCH IN THE SERVICE OF MEDICINE

(Continued from Page 1086)

OMAHA MID-WEST CLINICAL SOCIETY

The fifteenth annual assembly of the Omaha Mid-West Clinical Society will be held October 27 to 31, 1947, at the Hotel Paxton in Omaha.

This midwest medical meeting has become one of the larger and more important sectional meetings of the country. Distinguished visitors will participate in the extensive program which includes the various specialties.

A program may be obtained from Dr. J. M. Thomas, Secretary, 1031 Medical Arts Building, Omaha 2, Nebraska.

SOUTHERN MINNESOTA MEDICAL ASSOCIATION

Dr. C. L. Sherman, Luverne, was elected president of the Southern Minnesota Medical Association at the annual meeting held in New Ulm on September 8.

Other officers elected at the meeting were Dr. Lewis I. Younger, Winona, first vice president, and Dr. Carl Fritsche, New Ulm, second vice president. Dr. W. A. Merritt, Rochester, was re-elected secretary-treasurer.

Winona was selected as the convention city for 1948.

SOUTHWESTERN SOCIETY

The August 25 meeting of the Southwestern Medical Society was preceded by a dinner at the Worthington Country Club, attended by members of the society and their wives. After the dinner, the women were entertained at the home of Dr. and Mrs. B. O. Mork, Jr., while the society members conducted the regular meeting at the club. The principal features of the evening program were reports by Dr. S. A. Slater, Worthington, and Dr. D. J. Halpern, Brewster, who were delegates to the annual meeting of the Minnesota State Medical Association in Duluth in June.

WASHINGTON COUNTY SOCIETY

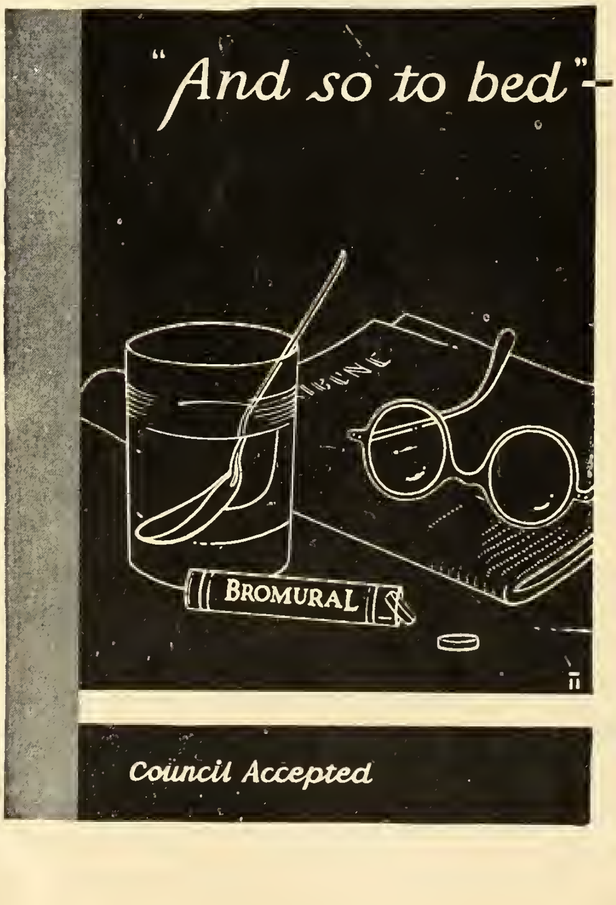
At the monthly meeting of the Washington County Medical Society, held in Stillwater on September 9, the guest speaker was Dr. Benjamin Sommers, Saint Paul, who spoke on "Treatment of Congestive Heart Patients."

Dr. Edgar C. Burseth, an associate of Dr. George M. Ruggles of Forest Lake, was elected a member of the society. A visiting guest at the meeting was Dr. Lucien Culver, Saint Paul, who formerly practiced in Stillwater.

MINNESOTA SOCIETY OF ANESTHESIOLOGISTS

All physicians interested in ansethesia and related subjects are invited to attend the second meeting of this Society Saturday evening, November 15, 1947, in Minneapolis.

For exact time, place and program, address Dr. J. W. Baird, Committee Chairman, University Hospitals, Minneapolis 14, Minnesota.



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WOMAN'S AUXILIARY

Upper Mississippi Auxiliary

The Woman's Auxiliary to the Upper Mississippi Medical Society were hostesses to the auxiliary members of the Northern Minnesota Medical Society at the convention on September 6, 1947. Approximately sixty members and friends registered and were guests of the Brainerd doctors at a luncheon in the main dining room of Breezy Point Lodge, where the convention was held.

In the afternoon the ladies participated in bridge and a social hour, and were served refreshments by the Brainerd doctors' wives. Mrs. J. A. Thabes, Sr., president of the state auxiliary, was an honored guest. There was a banquet in the evening for the doctors and their wives, at which Governor Youngdahl was the principal speaker.

Range Auxiliary

Members of the Range Medical Association Auxiliary held a joint session with members of the Medical Association at a dinner meeting in the Elks Club, at Eveleth in September. Auxiliary guest speaker was Margaret Moore, who gave a talk on her recent trip to Mexico, illustrated with motion pictures.

Mrs. Robert L. Bowen, president of the Auxiliary, represented her group at a tea which the women's organizations of Eveleth sponsored, following a public relations talk on various phases of socialized medicine given at the Little Theater of the Memorial Building on October 9. In the evening the Range Medical Association and Auxiliary members were hosts at a dinner for the St. Louis County Medical Society.

October 23 has been slated for the Auxiliary rummage sale to raise funds for the nursing scholarship at Hibbing General Hospital, which the organization is sponsoring. The Range Auxiliary embraces members from Hibbing, Chisholm, Buhl, Nashwauk and Keewatin.

SICKNESS STATEMENTS FOR RAIL WORKERS

Physicians throughout the nation are being asked to furnish medical evidence to substantiate the claims of railroad workers who may now draw cash sickness benefits under the Railroad Unemployment Insurance Act. The Railroad Retirement Board pointed out that unless an application is mailed not later than the seventh day after the first day of sickness claimed, it may not be received within the legal time limit for filing applications. As a result, the employe may lose one or more days' benefits. Physicians are asked either to return each completed Statement of Sickness to the patient, or mail it promptly to the office of the Board to which it is addressed.

Turmoil Time

Replacing Turmoil with Serenity

Replacing turmoil with serenity for women undergoing menopausal disturbances has become a matter of comparatively specific therapy.

Choice of an estrogenic product in this condition is likewise well charted. For optimum relief of symptoms, the competent physician selects a product whose manufacturing history he need never question.

This, perhaps, may account for the wide use of Solution of Estrogenic Substances, Dorsey. Made by Smith-Dorsey Company, whose plant facilities, personnel and procedure are above reproach, these products merit the continuing confidence of careful doctors.

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In Memoriam

JOHN A. DUFFALO, JR.

Lieutenant Commander John A. Duffalo, Jr., died suddenly at Oakland, California, on July 6, 1947, at the age of thirty-one.

Born in Minneapolis, Dr. Duffalo graduated from the University of Minnesota Medical School in 1940 and joined the navy in 1942. He took part in battles at Okinawa, Iwo Jima, Leyte and Luzon as flight surgeon aboard the escort carrier, U.S.S. *Lunga Point.*

Dr. Duffalo is survived by his parents, his wife, Ellen, and a son, Bruce.

HAROLD F. DUNLAP

Dr. H. F. Dunlap, formerly of the Mayo Clinic, died July 22, 1947, at Indianapolis, Indiana.

Born in 1895 at Duncannon, Pennsylvania, Dr. Dunlap received his M.D. degree from Indiana University in 1920 and entered the Mayo Foundation as a fellow in medicine, January 1, 1922. In 1932, he left the Foundation and after a year of practice in New Jersey, went to Indianapolis, where he had practiced and served as associate in medicine at the Indiana University School of Medicine since 1934.

ROBERT K. GREEN

Dr. Robert K. Green, head of the Department of Bacteriology at the University of Minnesota medical school and well known nationally for his research work in virus diseases and cancer, died September 6, 1947, at the age of fifty-two.

Dr. Green was born at Wadena, Minnesota, January 11, 1895. He attended school at the University of Valparaiso (Indiana) and at International Falls before attending the University of Minnesota. There he received the degree of B.A. in 1919, M.A. in 1920, and M.D. in 1922. He was a member of Sigma Xi and an Honorary Fellow in the New York Zoological Society.

A decade ago, Dr. Green was credited with having saved the nation's fox industry by developing a vaccine to prevent fox encephalitis. A year ago, he introduced a revolutionary theory on the cause of cancer. At the time of his death, he was working on what he hoped would be a successful vaccine against poliomyelitis and an agent to immunize against cancer. He left his personal laboratory equipment to the University of Minnesota for the continuation of research.

Dr. Green's wife, the former Beryl Bertha Sparks, whom he married in 1917, died in 1941. A daughter, Gale, two brothers and five sisters survive him.

Dr. Green was a member of Hennepin County Medical Society, the Minnesota State and American Medical Associations, the Society of American Bacteriologists, the American Society of Mammalogists, the American Association of Immunologists and the Minnesota Academy of Medicine.

JULIUS F. GENDRON

Dr. Julius F. Gendron, a practitioner in Grand Rapids, Minnesota, since 1904, died September 11, 1947, at the age of seventy-nine.

Dr. Gendron was born at St. Francis de Montmagny in the province of Quebec on March 31, 1868. After studying law at Laval University, he came to Minnesota and decided to study medicine. He graduated from Hamline University medical school in 1896. He practiced medicine at Centerville, Minnesota, from 1896 to 1898; at Saint Paul, as an associate of Dr. Marquis from 1898 to 1899; at Crookston from 1899 to 1900; at Red Lake Falls from 1902 to 1904, when he located in Grand Rapids. He was health officer for Grand Rapids for a number of years before his death.

Dr. Gendron was well known in Canadian literary circles as a poet, doing his writing in French. He was once poet laureate of Canada. In 1928, he published a symbolic poem in French entitled "D'Oil." Several works in both verse and prose were never published. In 1930, he became a member of the Society of French Canadian Poets.

A member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations, he served as a captain in the medical corps of the army in World War I. He is survived by his widow and a son, Bertrand Gendron, a druggist at Brainerd, Minnesota.

WILLIAM GINSBERG

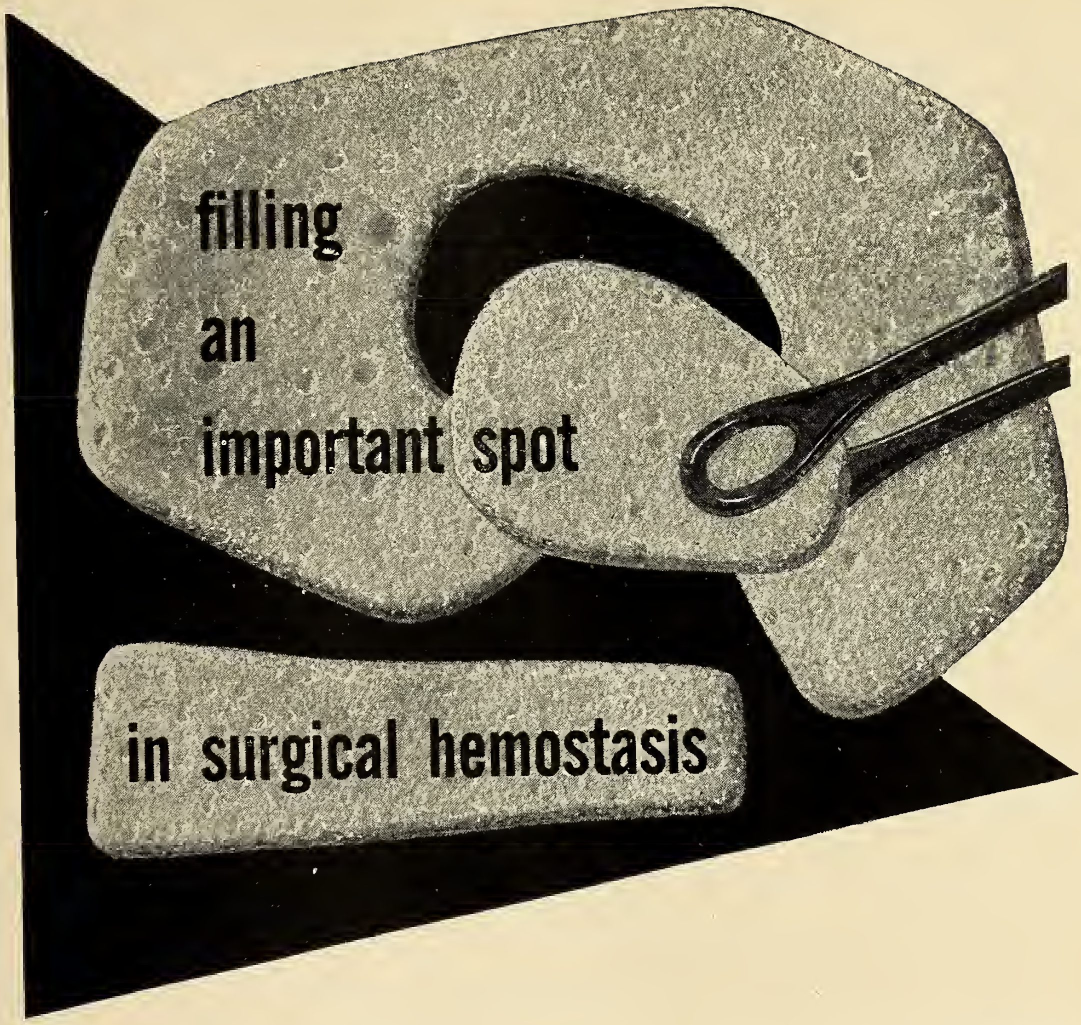
Dr. William Ginsberg, for thirty years a practitioner in Saint Paul, died at the age of fifty-seven on September 21, 1947, at his home. He had retired from active practice three years previously because of ill health.

Born in Saint Paul, December 11, 1889, he was the son of Jacob and Mollie Ginsberg. He attended the University of Minnesota where he received his B.S. degree in 1914 and his M.D. degree in 1915. During World War I he served overseas as a first lieutenant in the Medical Corps. He had maintained his reserve commission as a major since that time.

After his return to practice, Dr. Ginsberg was a staff member of St. Luke's, St. Joseph's and Miller Hospitals. Early in his career he manifested a broad untiring interest in medical, civic and philanthropic activities, and although he included the entire gamut of community life, he had the sincerity and patience to master the details of the many institutions and causes with which he was affiliated. Nothing which was socially progressive or helpful was alien to his sphere.

He was one of only two life members of the Jewish Educational Center, of which he was one of the principal founders and first president. For many years he was active in Boy Scout Circles, serving as a member of the Executive Committee of the Boy Scouts of America, Saint Paul Area Council, and as chairman of

(Continued on Page 1094)



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IN MEMORIAM

(Continued from Page 1092)

the Leadership and Training Committee of the Saint Paul Area Council, Boy Scout Regional Executive Committee.

His memberships indicated the diversity and generosity of his interests. These included the Ramsey County Medical Society, Minnesota State Medical Association, American Medical Association, B'nar B'rith lodge of which he was a Past President, Masonic Lodge, American Legion, Jewish War Veterans, and Veterans of Foreign Wars. He was also a member of the St. Paul Refugee Service Committee, Refugee Affidavit Committe and the Conference of Christians and Jews. He was a member of the Board of Directors of the Jewish Home for the Aged, the Temple of Aaron Congregation, Central Hebrew School, St. Paul Zionist Organization, Jewish Welfare Board, United Jewish Fund and Council, Central Community House, Council of Jewish Social Agencies, the American Jewish Congress and chairman of the Local Theological Seminary.

On April 28, 1947, Dr. Ginsberg was chosen to represent the St. Paul Jewish physicians by signing a goodwill certificate which was sealed in the cornerstone of the new tuberculosis hospital, a unit of Hebrew University Hospital on Mount Scopus, Jerusalem.

He received an award from the Jewish War Veterans, naming him the outstanding Jewish citizen in 1942, recognition of a life of communal service and benefaction which won him the highest esteem, confidence and admiration of all.

He is survived by his sons, Dr. Robert L. Ginsberg and James P. Ginsberg of Saint Paul and Stanley Thomas Ginsberg of Oshkosh, Wisconsin, and three sisters, Annie and Lily Ginsberg and Mrs. Alex Mains, all of Saint Paul, and a brother, Dr. S. Theodore Ginsberg of Marion, Indiana.

BENJAMIN F. SMITH

Dr. B. J. Smith, formerly superintendent of the State Hospital at Rochester, Minnesota, died August 17, 1947, at Jackson, Louisiana, where he was superintendent of the Louisiana State Hospital.

Dr. Smith was born March 3, 1895. He received his B. A. degree from the University of Missouri in 1917 and his M. D. degree from Tulane University in 1919.

He came to Minnesota in 1922 as assistant physician at the St. Peter State Hospital and was superintendent of the Willmar State Hospital from 1927 to 1935 when he was appointed superintendent of the Rochester State Hospital. He left here in 1942 and later was superintendent at a hospital in Missouri before his appointment to the Louisiana State Hospital.

On June 15, 1920, at Neosho, Missouri, Dr. Smith married Stella G. Walters, who with three sons, Dr. B. F. Smith, Jr., of St. Louis, William, and George, survive.

Communication

To the Editor:

Dr. Kano Ikeda's criticism* of the edito ial "Laboratory Abuse" is gratefully acknowledged by the author.

The title of the editorial is unfortunate. It was not the author's choice. There was no allegation of abuse. Dr. Ikeda heartily agrees with the observation that the multiplicity of laboratory procedures may be a distinct danger to the clinical approach.

He does not agree with the idea of the partition of the economic load nor does he like the illustration of a cushion, i e., the State Board of Health Laboratories.

Besides the present multiplicity of laboratory procedures we add as an example the oncoming rush of requests for hormone levels in the blood or urine, the vitamin levels in body fluids, the various enzyme systems. Who is going to pay the technicians able to do these biochemical assays?

Again, every hospital the author has contact with, and every physician of his acquaintance uses the State Board of Health Laboratories for diagnostic purposes. The reason for this is obvious. Lack of facilities or economic pressure, or both, are the factors which have brought this about.

It was in that sense the author used the word "cushion."

Henry L. Ulrich
Associate Editor

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*See page 1011, September, 1947, issue.

SHOULD BUSINESS AND PROFESSIONS JOINTLY OPPOSE WELFARE STATE?

Industrialists and manufacturers show little inclination to oppose Federalization of medicine. The banker may think it is no worry of his if medicine is socialized. The physician may conclude he has nothing to lose if the Federal Government sets up sickness insurance benefits by diverting railroad unemployment insurance funds into strange channels. But the banker, the physician, and the manufacturer would do well to inquire if they are not all being threatened by various manifestations of a single movement. Schemes for socialization do not operate in an economic vacuum. They are well planned; they strike on many fronts. No one can predict which part of the economy will be taken over first when the Welfare State is established.—*Insurance Economics Surveys,* September, 1947.

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Robert Meller, M.D.	*Psychiatry*
C. O. Erickson, M.D.	*Psychiatry*
Donald Reader, M.D.	*Neurology*
N. J. Berkwitz, M.D.	*Psychiatry, Neurology*
Grace, Johnson, O.T.R.	*Occupational & Recreational Therapy*
June McChord, B.A.	*Dietetics*
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◆ Of General Interest ◆

On September 25 the Freeborn County Medical Society met at Albert Lea and heard Dr. J. W. Pender, Rochester, speak on "New Drugs and Techniques for Anesthesia."

* * *

On August 27, Dr. B. M. Spock, Rochester, spoke on "The School-Aged Child" at a meeting of the Minnesota Conference of Child Caring Institutions, in Saint Paul.

* * *

President of the Northern Minnesota Medical Association is Dr. Charles W. Vandersluis, Bemidji, who was elected at the annual meeting at Breezy Point, September 6.

* * *

Dr. Lyman R. Critchfield and Dr. Edwin C. Burklund have announced their association in the practice of pediatrics and the removal of their offices to 1517 St. Clair Street, Saint Paul.

* * *

"Ulcerative Disease of the Bowel" was the title of a paper presented by Dr. P. W. Brown, Rochester, at a meeting of the Champaign County Medical Society in Champaign, Illinois, on September 18.

* * *

At a meeting of the British Association for the Advancement of Science, held at Dundee, Scotland, on September 1, Dr. Charles F. Code of Rochester spoke on "Man's Reaction to Centrifugal Force."

* * *

After practicing medicine in Northome for a year, Dr. B. G. Nelson closed her offices in that city on August 8. She planned to vacation for several weeks before opening a medical practice elsewhere.

* * *

The Minnesota Chapter of the American Medical Technologists elected Jack O. Kirkham, of the Estrem Clinic in Fergus Falls, president of the organization at the annual meeting in Minneapolis September 6.

* * *

Ten lectures entitled "Ophthalmology in General Medicine" were given by Dr. H. P. Wagener, Rochester, at an instructional course that started September 2 and was sponsored by the Ophthalmological Study Council at Portland, Maine.

* * *

In Chicago on September 8, Dr. J. Arthur Myers, professor of public health at the University of Minnesota, delivered an address at the Mississippi Valley Tuberculosis Conference. Dr. Myers was the retiring president of the organization.

* * *

A bust of Walter Reed will be placed in the New York University Hall of Fame, probably in May, 1948, when the Fourth International Congresses of Tropical Medicine and Malaria meet in Washington, D. C. At that time the British will pay honor to their great malariologist, Sir Ronald Ross.

* * *

It has been announced that Dr. Ralph R. Sullivan has resigned as director of venereal disease control and acting director of medical services for the Minneapolis Health Department. Dr. Sullivan will become venereal disease control director for Oregon.

* * *

Community Health Association in Two Harbors recently announced that Dr. E. Bryant Woods, an obstetrician and gynecologist from Tampa and Tarpon Springs, Florida, had arrived in the city to join the staff of the North Shore Clinic in Two Harbors.

* * *

Dr. O. W. Scholpp, Hutchinson, has purchased a corner lot in that city where he plans to have a new office building constructed sometime in the future. One feature of the new building will be a large x-ray room, arranged for ease and efficiency of operation.

* * *

At a tuberculosis conference in Chicago early in September, Dr. Ernest S. Mariette, superintendent of Glen Lake Sanatorium, participated in a panel discussion on ways and means of making nursing more interesting to prospective students.

* * *

Dr. Charles W. Rogers, former practitioner in Heron Lake, who recently completed postgraduate training in pediatrics at the University of Minnesota, is now specializing in pediatric practice as a member of the Winona Clinic in Winona.

* * *

"Exchange Transfusion" was the subject discussed by Dr. William Heilig, Northwestern Hospital, Minneapolis, at a meeting of the Twin City Society of Medical Technologists held in Saint Paul on September 10.

* * *

While Dr. M. H. Larson, Nicollet, was trying to dodge hurricanes and do some deep-sea fishing during his September vacation along the Gulf of Mexico, his medical practice back home was conducted by Dr. Leander Sjostrom of St. Peter.

* * *

"Emotional Conflicts and Their Relation to Sterility" was the topic presented by Dr. Gordon R. Kamman, Saint Paul, at the meeting of the American Congress of Obstetrics and Gynecology held in St. Louis, Missouri, on September 9.

* * *

Dr. G. M. Kelby, Minneapolis, has announced the association of Dr. Harry W. Mixer in the practice

(Continued on Page 1098)

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(Continued from Page 1096)

of radiology. Dr. Mixer, who is also an instructor in radiology at the University of Minnesota Hospitals, began his work with Dr. Kelby on August 15, 1947.

* * *

Dr. R. G. Tinkhman, who had been associated with Dr. John Eiler of Park Rapids in the practice of medicine and surgery since December, 1946, withdrew from the partnership in August but at the time was undecided as to where he subsequently planned to locate.

* * *

Dr. M. J. Schirber, who recently completed a two-year residency at St. Joseph's Hospital in Chicago, has become associated in the practice of medicine with Dr. M. J. McKenna, Dr. R. V. Jolin, and Dr. A. V. Grinley in Grand Rapids. Dr. Schirber is a graduate of Northwestern University.

* * *

On August 23, Dr. Roger G. Hassett, Mankato, suffered two fractured ribs when the automobile in which he was riding was struck by another car at a street intersection in Mankato. The only person injured in the accident, Dr. Hassett was believed to have been thrown forward against the dash board.

* * *

Two Thief River Falls physicians, Dr. Harold C. Johnson and Dr. C. A. Haberle, have announced their withdrawal from membership in a local clinic and have jointly engaged in general practice in a combined office in that city. They plan later to erect a clinic building in the business district of Thief River Falls.

* * *

In Sandstone on September 5, Dr. H. P. Dredge celebrated the forty-fourth anniversary of his arrival in the city. Forty-four years ago, Dr. Dredge stated, he arrived in Sandstone in a freight car, sleeping on a cot, surrounded by his household goods and a team of horses, but eager to open his medical practice.

* * *

At a meeting of the Cancer Institute, a division of the Iowa State Department of Health, held in Des Moines on September 23, Dr. D. O. Ferris of Rochester presented two papers, entitled "Carcinoma of the Kidney, Ureter and Bladder" and "Carcinoma of the Uterus." The meeting was sponsored by the Iowa State Medical Society.

* * *

Dr. Richard P. Griffin, who has been associated for the past year with Dr. I. L. Oliver at Graceville, recently opened a practice in the office of Dr. Oscar Daignault in Benson. A graduate of the University of Iowa in 1944, Dr. Griffin interned at Santa Rosa Hospital in San Antonio, Texas, before entering the navy for one year.

* * *

Recently discharged from the army, Dr. Gerald E. Bourget has become associated in practice with Dr. L. H. Rutledge and Dr. C. W. Moberg in Detroit Lakes. A graduate of the University of Minnesota in 1944, Dr. Bourget served his internship at Western Pennsylvania Hospital in Pittsburgh before entering the army.

* * *

Results of the chest x-ray survey in Blue Earth County and North Mankato were reported at the annual meeting of the Blue Earth County Public Health Association by Dr. Hilbert Mark, director of the Tuberculosis Division of the State Board of Health, who was the principal speaker at the September 24 meeting in Mankato.

* * *

Dr. Robert E. Rocknem, who recently completed an internship at Minneapolis General Hospital, was married in Minneapolis early in September to Miss Margery Lou Hill, formerly of Veblen, South Dakota. A graduate of the University of Minnesota, Dr. Rocknem expected to be called to active duty in the army in late September.

* * *

An emergency health board was organized in Hibbing at a meeting on August 27. The group will work within the framework of the Community Fund to supply funds for emergency health cases where needy patients are concerned. Among the members of the board are Dr. Carlyle Tingdale, Dr. T. A. Estrem, and Dr. C. N. Harris, all of Hibbing.

* * *

On October 1, Dr. W. W. Canfield returned to Houston after almost four years of absence, and opened offices for his medical practice. Dr. Canfield formerly practiced in Houston from 1929 until January, 1944, when he entered military service. After his discharge from the army, he practiced medicine for a short time at Forest Lake and at Winona.

* * *

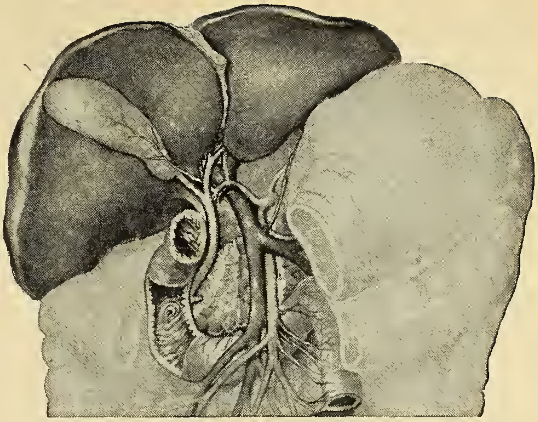
Dr. Percy T. Watson, Minneapolis, suffered bruises and an injury to his eye on the morning of September 8 when his automobile was struck on a highway near Rosemount by a car coming out of a blind crossing. Dr. Watson's car rolled over twice, bruising the physician and another occupant. The two occupants of the other car were not injured.

* * *

In White Bear, Dr. A. L. Wurdemann, formerly of East Orange, New Jersey, has opened offices for the general practice of medicine. Dr. Wurdemann, a graduate of the University of Iowa, served her internship at East Orange General Hospital in New Jersey and later became associated in an obstetrics and gynecology practice in East Orange.

* * *

Rochester physicians who presented papers at the annual session of the Michigan State Medical Society, at Grand Rapids, September 23 to 26, included Dr. S. W. Harrington, Dr. W. E. Herrell, and Dr. Paul A. O'Leary. Dr. Harrington spoke on "Surgical Treatment of Carcinoma of the Breast," Dr. Herrell on "The Present Status of Sulfonamide and Antibiotic Therapy," and Dr. O'Leary on "The Use of Penicillin in the Treatment of Syphilis in General Practice."



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Word has been received that Dr. Donald T. Anderson, former Red Wing resident now on the staff of the Veterans Hospital in St. Cloud, has been promoted to the rank of captain in the U. S. Army Medical Corps.

* * *

An annual fall chest clinic was held in Faribault on September 22, at which time Dr. Karl H. Pfuetze, superintendent of Mineral Springs Sanatorium, interviewed former patients of the sanatorium and administered free Mantoux tests to all interested residents of the area as part of the campaign against tuberculosis.

* * *

Newly appointed to the staff of the University of Minnesota pediatrics department as an associate professor is Dr. Charles D. May, formerly of Boston. Graduated from Harvard University Medical School in 1935, Dr. May was director of the outpatient department at the Children's Hospital in Boston when he accepted the Minnesota appointment.

* * *

Dr. Charles D. Freeman, Jr., has opened offices at 1160 Lowry Medical Arts Building, Saint Paul, for the practice of dermatology and syphilology. After graduating from the University of Minnesota Medical School in 1942, Dr. Freeman spent three and a half years in the army medical corps in Puerto Rico, in Kentucky, and on the European front.

* * *

Dr. Erling G. Hestenes, resident physician at St. John's Hospital, Saint Paul, has accepted a call to establish a medical mission and public health service in Africa. Recently discharged from the army, Dr. Hestenes will assume his new duties early next year. It will be the first time that an American physician has been permitted to practice in British South Africa.

* * *

Dr. Charles W. Fogarty, Jr., has opened offices at 1019-1021 Lowry Medical Arts Building, Saint Paul, for the practice of internal medicine, with special emphasis on arthritis and allied rheumatic disorders and peripheral vascular diseases. Dr. Fogarty was a member of the class of 1938 of the University of Minnesota Medical School. He has since spent four years at the Mayo Clinic and four years in the army.

* * *

After practicing in Lakeville since January, Dr. Paul A. Wagner closed his office on September 15 and left for Portland, Oregon, to complete his war-interrupted postgraduate training in a hospital there. A graduate of the University of Minnesota, Dr. Wagner served for three years in the army, stationed in Burma for part of the time. Following his discharge, he opened practice in Lakeville.

* * *

The Dearholt Medal for distinguished service in combating tuberculosis has been awarded to Dr. S. A. Slater, superintendent of the Southwestern Minnesota Tuberculosis Sanatorium. The medal, named for the late Dr. Roy Dearholt of Milwaukee, pioneer tuberculosis fighter, was presented to Dr. Slater at a recent dinner meeting of the Mississippi Conference on Tuberculosis.

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Under the leadership of Dr. J. W. Duncan, a committee in Moorhead is staging a county-wide drive to raise funds for the building of the Mayo Memorial medical center at the University of Minnesota. Plans are to establish a quota and work out a method for covering the entire county during the drive. In Moorhead the aid of local service organizations is being enlisted to cover the city.

* * *

Dr. John J. Bittner, University of Minnesota cancer research head and president of the American Association for Cancer Research, was a member of the nine-man United States delegation to the Fourth International Cancer Research Conference held in St. Louis, Missouri, September 2 to 7. About 200 scientists from more than thirty countries attended the conference, the first since the war ended.

* * *

The Southern Minnesota Spastic Club had Dr. John F. Pohl of Minneapolis as its guest speaker at a meeting held in Mankato on September 19. Dr. Pohl, who is attending orthopedic surgeon for the Michael Dowling School for Crippled Children, medical supervisor for the Elizabeth Kenny Institute, and a member of the medical advisory committee of the Minnesota Society for Crippled Children, discussed problems in the care and rehabilitation of cerebral palsied children.

* * *

Formerly of Minneapolis, Dr. Theodore Rasmussen has been appointed professor of neural surgery at the University of Chicago. A graduate of the University of Minnesota Medical School and a former fellow in the Mayo Foundation, Dr. Rasmussen has been doing neurosurgical work at the Montreal Neurological Institute for the past several years. During the war he was neural surgeon for the Fourteenth Evacuation Hospital in Burma.

* * *

On September 16, Dr. Donald W. Hastings, professor and head of the department of neuropsychiatry at the University of Minnesota, spoke at a meeting held in the Fort Snelling armory by the 110th General Hospital Organized Army Reserve.

A colonel in the Army medical reserve, Dr. Hastings discussed problems of military personnel in regard to neuropsychiatric fitness. Dr. Hastings is a member of a national ten-man commission studying that topic.

* * *

Dr. Curtis J. Lund, associate professor of obstetrics and gynecology at the University of Minnesota Medical School since 1943, has become head of the University of Louisiana's department of obstetrics and gynecology at New Orleans.

Dr. Lund, who received his medical degree at the University of Wisconsin in 1935, has been engaged in research work at the University of Minnesota and, previously, at the University of Wisconsin.

* * *

Dr. Elliot C. Cutler, Moseley Professor of Surgery at Harvard and surgeon-in-chief at the Peter Bent

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Brigham Hospital in Boston, died at his home on August 16, 1947. During World War II, Dr. Cutler was a brigadier general in the Medical Department of the Army, serving as chief consultant in surgery and later as chief of professional services in the Office of the Chief Surgeon, European Theater of Operations. He was an honorary consultant to the Army Medical Library.

* * *

Washington County will be one of the first areas in Minnesota, after the Twin Cities, to have a mass chest x-ray survey conducted, it was recently announced. No definite dates for the survey have yet been set, but it is expected that the program will get under way early in the fall of 1948. Funds to finance the survey will come partly from the sale of Christmas seals and partly from money raised by popular subscription in the county. Chairman of the survey is Roy Sakrison of Bayport.

* * *

Included in the new advisory board of the Diagnostic Clinic for Rheumatic Fever in the Wilder dispensary, Saint Paul, are Dr. Thomas E. Broadie, Dr. R. B. J. Schoch, Dr. George W. Snyder, Dr. Edward L. Strem, Dr. Robert Rosenthal, Dr. Harold Flanagan, Dr. James N. Dunn, and Dr. Paul F. Dwan.

Dr. Evelyn Harris is medical director of the clinic, which is sponsored by the Saint Paul section of the National Council of Jewish Women. Any Saint Paul child up to the age of eighteen years is eligible for the clinic's services.

* * *

Dr. Donald E. Hoaganson, a former Bemidji resident who has been practicing with Dr. H. R. Tregilgas in Saint Paul, recently moved back to Bemidji and became associated with Dr. Charles W. Vandersluis of that city.

A graduate of the University of Minnesota Medical School in 1944, Dr. Hoaganson served his internship at St. Joseph's Hospital in Saint Paul before entering the armed services. Following his discharge from the army in March, 1947, he joined Dr. Tregilgas in Saint Paul.

* * *

Formal recognition for his contributions to medicine and public health has been given to Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, by the House of Delegates of the Minnesota State Medical Association. A resolution recently passed by the House of Delegates commented on Dr. O'Brien's radio health broadcasts, and read in part: "Resolved that this House express its deep appreciation and thanks to Dr. O'Brien for the unique contribution he has made through his work to medicine and the public health in Minnesota."

* * *

Dr. Richard Virnig, who was released from naval service in June, has joined his brother, Dr. Mark P. Virnig, in medical practice in Wells.

The brothers are having the first floor of a building in Wells remodeled into a fourteen-room office suite.

The new offices will include waiting room, recovery and physiotherapy room, two private offices with adjoining treatment rooms, x-ray room, darkroom, laboratory, secretary's office, and a minor surgery room.

Dr. Richard Virnig is a graduate of the University of Minnesota. He interned at the Naval Hospital in Philadelphia and then served for five years in the navy. He was discharged on June 25.

* * *

A new member of the Marshall Medical Center is Dr. P. C. Hedenstrom, formerly at Bethesda Hospital in Saint Paul. The staff of the Marshall clinic is now comprised of Dr. W. W. Yaeger, Dr. J. E. Murphy and Dr. Hedenstrom.

* * *

Following a flood in Hibbing in the week of September 7, Dr. Carlyle Tingdale, local health officer, stated that citizens who had been exposed to insanitary sewer conditions should consult their local physicians in regard to typhoid innoculations. In his newspaper message, Dr. Tingdale said that there was no imminent danger but that the preventive health measure should be observed.

* * *

Dr. Clifford G. Grulee, Jr., an instructor in pediatrics at the University of Minnesota since 1946, has accepted a position as assistant professor of pediatrics at the University of Texas, Galveston. Dr. Theodore G. Panos, head resident physician in pediatrics at the University of Minnesota, will also move to Galveston to become an instructor in pediatrics at the University of Texas. He has been at Minnesota since 1945.

Both Dr. Grulee and Dr. Panos will be associated with Dr. Arild E. Hansen, head of the pediatrics department at the University of Texas, who was formerly an associate professor of pediatrics at the University of Minnesota.

* * *

After five years of medical practice at Erskine, Dr. J. H. Cameron has joined the staff of the Northwestern Clinic at Crookston, where he will be associated with Dr. C. L. Oppegaard in the Eye, Ear, Nose and Throat Department.

A graduate of the University of Saskatchewan and McGill University of Surgery at Montreal, Dr. Cameron took postgraduate work in surgery at California Hospital in Los Angeles and at New York Polyclinic Hospital. Before opening his practice at Erskine in 1942, he practiced in Bagley for four years. Dr. Cameron is a past president of the Red River Valley Medical Society.

* * *

Approved residencies in internal medicine and general surgery will soon be available at the Veterans Administration Center, Dayton, Ohio, it was recently announced. The residency training program is being conducted under the auspices of the University of Cincinnati College of Medicine and will follow the pattern of residencies in the Cincinnati General Hospital. There are 1,004 general medical and surgical beds at the VA institution and 2,500 domiciliary beds. Application for residency should be made to Dr. D. E.

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Nolan, Chief Medical Officer, Veterans Administration Center, Dayton, Ohio. Approval for training lies entirely within the jurisdiction of the Dean's Committee of the University of Cincinnati College of Medicine.

* * *

For two weeks in September Dr. Ira O. Wallin, Saint Paul, conducted the practice of Dr. W. J. Lund in Staples while Dr. Lund was a patient in the Northern Pacific Hospital in Saint Paul.

* * *

On August 23, Dr. Linus F. Leitschuh, a former resident of Minneapolis, was married to Miss Helen Patricia Carroll in Portland, Oregon, where Dr. Leitschuh is on the staff of Providence Hospital. A graduate of the University of Minnesota in 1937, Dr. Leitschuh was at Minneapolis General Hospital for three years, after which he practiced at Red Lake Falls for one year. He then served in the army for five years. After January 1, 1948, he will be established in an obstetrics and gynecology residency at St. Mary's Hospital, Minneapolis.

* * *

Two talks on tuberculosis were given by Dr. Kathleen Jordan, Granite Falls, at meetings held in Virginia and Ely on September 23. In the afternoon, Dr. Jordan, whose husband is Dr. Lewis S. Jordan, superintendent of Riverside Sanatorium in Granite Falls, addressed a gathering of school superintendents, physicians and nurses in Virginia, leading a discussion on Mantoux testing in schools of the area. Dr. Mario Fischer, Duluth city health director, presided at the meeting. In Ely, at a dinner meeting that evening, Dr. Jordan spoke on "The Eradication of Tuberculosis."

Both meetings were part of the anti-tuberculosis program being conducted by the St. Louis County Tuberculosis and Health Association.

* * *

Announcement has been made that Dr. Milton D. Starekow, for the past six years associated with the Lynde Clinic in Thief River Falls, has purchased the clinic from Dr. O. G. Lynde, and that Dr. Frank Fraser, formerly on the staff of St. Vincent's Hospital in New York, has become associated with Dr. Starekow in the practice of medicine and surgery.

A graduate of the Medical College of New York University, Dr. Fraser served his internship and a surgery residency at St. Vincent's Hospital, New York. He then studied surgery for eighteen months under Dr. L. K. Ferguson in Philadelphia. During the war Dr. Fraser served in the navy for three and one-half years.

* * *

For his aid in planning medical evacuations during the Normandy invasion, Dr. Einar C. Andreassen, chief of medical service for the Veterans administration branch at Fort Snelling, has been awarded the Order of the British Empire by the king of England.

Dr. Andreassen, who was chief of medical operation for the U. S. Army in southern England during the war, will go to Washington to receive the award from the British ambassador.

Dr. Andreassen, a graduate of the University of Minnesota in 1917, was a Navy lieutenant during

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World War I. After six years in China as a doctor with the Lutheran Board of Missions, he set up practice in Minneapolis. He was called to active military duty with the Minnesota National Guard in 1941.

* * *

Honorary fellowship in the American Medical Association has been granted Dr. C. P. Robbins, Winona, who is now in his fifty-fourth year of medical practice.

Dr. Robbins, a graduate of Jefferson Medical College in Philadelphia in 1894, first opened his medical practice in Winona in 1896 after a year in Los Angeles and a year of postgraduate surgical study in New York. During his years in Winona he twice traveled to Europe for a year of study in Vienna, Berlin and London. In his earlier years of practice he was a steady contributor to several medical journals.

Dr. Robbins has been the official Winona County physician for ten years. He is a life member of the Winona County Medical Society and an honorary life member of the Minnesota State Medical Association.

* * *

As a one-man commission for the Rockefeller Foundation, Dr. Irvine McQuarrie, head of the pediatrics department of the University of Minnesota Medical School, left for Japan on September 16 to conduct a three-month survey of medical education and practice.

Dr. McQuarrie will visit twenty-seven Japanese medical schools, inspecting laboratory facilities, clinics, libraries and hospitals. His report will aid the Rockefeller Foundation in determining its future support of Japanese medical training. Dr. McQuarrie also will be a special consultant to General MacArthur on medical education.

During his absence, Dr. John M. Adams, associate professor, will be acting head of the pediatrics department.

* * *

Ten orthopedic clinics are being conducted throughout the state this fall by the State Division of Social Welfare.

The clinics include examinations by orthopedic surgeons, diagnosis and recommendation for treatment, consultation with the patient's physician, and vocational advice for children more than sixteen years old. The service is made possible by state and federal funds and is part of the crippled children's service of the welfare division.

Each clinic conducted in the state serves several different counties in the area surrounding the site of the clinic. Cities at which clinics are being conducted are the following: Winona, Fergus Falls, Bemidji, Virginia, Cambridge, Little Falls, Mankato, Crookston, Willmar, and Marshall.

Organizations co-operating in the program are the Minnesota-Dakota Orthopedic Society, Northwestern Pediatric Society, Gillette State Hospital for Crippled

Children, Division of Vocational Rehabilitation, Minnesota Public Health Association, and the Minnesota State Medical Association.

* * *

Twice within the past year an International Falls eye, ear, nose and throat specialist has had the unusual task (for his geographic area) of removing a filaria parasite from the eye of a patient.

The patient, an ex-missionary, contracted filariasis between 1925 and 1932 while living in the Belgian Congo. Not until several years after her return to the United States did she become aware of the infection. At that time a California physician removed a filaria parasite from one eye. A year ago, while living in International Falls, she again noticed a "wriggling sensation" in her left eye. Her local physician removed an inch-long parasite from the superficial tissues of her eyeball. In August of this year, she again experienced the same symptom, and for the second time the International Falls physician hooked out a filaria parasite, this one 22 millimeters long and embedded in the lower lid of her left eye.

* * *

Fifty-nine years of medical practice lie behind Dr. Ward Z. Flowers, Gibbon, who has at last retired in the community he served for three decades.

After graduating from the University of Illinois School of Medicine in 1886, Dr. Flowers came to Minnesota for a brief visit with his sister in Sibley County. His love of hunting was so satisfied by the abundant wild life in that area that he decided to stay and practice medicine for one year. After twelve months in Gibbon, he gave up plans to study in Germany and decided to make Gibbon his home. The hunting was too good to leave.

Hunting has always been Dr. Flowers' favorite recreation. From 1896 until 1940 he never missed an open season for deer in the United States and Canada. Though less active now at the age of eighty-six, he still keeps his guns free from rust for each fall season.

Dr. Flowers practiced in Gibbon for thirty-three years, and then moved to Minneapolis for another twenty years of professional work. When his wife died in 1940, he returned to Gibbon, reopened his practice, and served the community until 1946. During the past summer, while Gibbon was without a resident physician, Dr. Flowers was still on call for emergency cases.

* * *

Attorney General J. A. A. Burnquist on September 5 ruled that a school board has power to abolish the position of school physician but it has no authority to contract with a hospital to furnish professional services of a physician.

The legal question came up when a school board in St. Louis County employed a school physician for the year 1946-47, then in August abolished the position and made a contract with a local hospital to furnish physicians to serve the school. The physician whose position was abolished claimed veterans preference right to employment and contended his contract was still in force.

"It was for the school board to decide whether it would have a school physician," stated Burnquist. "It decided to have one for the year 1946-47. The board had the power to continue or discontinue the employment. When the board abolished the position, it determined a policy."

In regard to the hospital contract, however, the attorney general emphasized that "a hospital is not a person and is not licensed to practice medicine." He went on, "I fail to understand how in the case under consideration a hospital can assume to furnish the services which the law contemplates will be performed by physicians. In other words, the hospital cannot practice medicine."

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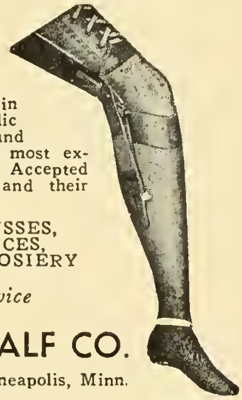

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The attorney general then ruled: "So far as the board attempted to contract with a hospital to furnish the professional services of a physician, it is my opinion that the contract was without effect and, in fact, was not a contract."

* * *

DR. M. A. BURNS HONORED

Dr. M. A. Burns of Milan was the guest of honor at festivities held at the Kviteseid Lutheran Church at Milan, Minnesota, on September 14, 1947. Friends and townsfolk gathered in large numbers to celebrate approximately fifty years of faithful and conscientious service contributed by Dr. Burns to the community.

The idea of the appreciation day festival for the doctor originated among his friends and was carried out by action of the Milan Commercial Club.

The program started at 2:30 p.m. with Rev. Frank M. Salveson as master of ceremonies. Rev. R. R. Syrdal, Madison, former pastor at Milan, pronounced the invocation. This was followed by a song by the Gay Nineties Quartette of Montevideo. Dr. William A. O'Brien, Minneapolis, delivered an address, dwelling on some of the great advances made in the science of medicine during the past fifty years.

Dr. Leon G. Smith, Montevideo, told how he and Dr. Burns have been working pleasantly together in the practice of their profession. He also presented the guest of honor with a pin awarded by the Minnesota State Medical Association for fifty years of medical practice. Miss Solveig Anderson brought a greeting from the Milan school in appreciation of the many years Dr. Burns has served as a member of the local board of education.

The Rev. Mr. Salveson read a paper written by Dr. Arnold Anderson of St. Petersburg, Florida, but formerly of Milan, telling of many interesting incidents of the early days in Milan.

A gift in the form of a gold watch was then presented by the Rev. Mr. Salveson to the honored guest. It bore the inscription: "Dr. M. A. Burns, 50 Years of Faithful Service, 1898-1948, Milan Community."

After Dr. Burns had expressed his appreciation of the honors shown him, refreshments were served in the church parlor. In passing down the line to greet the guest of honor, each person deposited a gift of money in a large bowl which, with its contents, was later presented to Dr. Burns.

It was generally agreed that the celebration was a great success from beginning to end, and served its purpose of expressing the appreciation of the community to Dr. Burns.

* * *

AMERICAN CONGRESS OF PHYSICAL MEDICINE

Physical medicine stepped into the spotlight on September 2 when the American Congress of Physical Medicine opened its twenty-fifth annual meeting in the Radisson Hotel in Minneapolis. An estimated 500 specialists in physical medicine attended the five-day session which extended through September 6.

On the first day of the meeting a prediction was made by Dr. Max Newman, head of the physical medicine section at Wayne University, Detroit, that within the next ten years even small general hospitals in the United States will expand to include physical and occupational therapy departments. The new president of the organization, Dr. H. Worley Kendall of the University of Illinois, pointed out the great strides that physical medicine has been making in the rehabilitation of war veterans and in the return to productivity of persons injured in industry. "Physical medicine has become one of the vital agents in keeping American production in high gear," he stated.

Among the mechanical devices exhibited at the meeting was an electrical apparatus developed by Dr. Donald L. Rose, University of Kansas, and Dr. Sedgwick Mead, Massachusetts General Hospital, that measures the level of a patient's ability to withstand pain. It is hoped that the device will lead to research which will produce apparatus to stimulate muscles without pain or discomfort of any kind.

Dr. Allan Hemingway, University of Minnesota, demonstrated to the group the value of an oximeter in the treatment of poliomyelitis, while the essentials of atom smashing and the development of radioactive elements were displayed by Dr. Frederic T. Jung of the AMA Council on Physical Medicine.

Artificially induced fever was shown to be of some value in the treatment of chronic rheumatoid arthritis by three Mayo Clinic physicians, Dr. Frank H. Krusen, Dr. K. G. Wakim, and Dr. E. C. Elkins. Physical exercise, started while tuberculosis patients are still confined to bed, was advocated by Dr. Edwin R. Levine of Michael Reese Hospital, Chicago.

The importance of games and exercise in the treatment of mental disease was emphasized by Dr. J. E. Davis, Veterans Administration chief of corrective physical rehabilitation, who cited numerous examples to show that the proper use of games and exercise helps restore mental balance by developing confidence in the patient or respect for his fellow men.

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At the annual dinner of the organization on the evening of September 4, the gold key award of the Congress was presented to Dr. A. C. Ivy, physiology professor and vice president, University of Illinois; to Major General Norman T. Kirk, former surgeon general of the army, and to Lord Thomas Horder, president of the British Association of Physical Medicine. Dr. Ivy was the only one of the three present to receive the citation.

Dr. O. Leonard Huddleston, Los Angeles, was named president-elect of the Congress, and Dr. Earl C. Elkins, Rochester, was elected first vice president.

HOSPITAL NEWS

The American College of Hospital Administrators named Ray Amberg, Rosetown, second vice president of the organization at a convention held September 22 in St. Louis. Mr. Amberg is superintendent of the University of Minnesota Hospitals.

* * *

While in Minneapolis in August, Dr. Paul R. Hawley, chief medical director of the Veterans Administration, stated that the proposed $6,000,000 addition to the Fort Snelling Veterans Hospital will make the institution one of the most modern medical centers in the nation. He said that the hospital already is "one of the outstanding plants of the world," including private hospitals, and that much of the credit for the rating must go to the University of Minnesota for placing its medical resources behind the hospital.

The new addition will be a centrally placed structure connected to the other buildings in a spoke-like arrangement. It will house surgery and clinical departments and will allow the addition of 300 beds, to give the hospital a total of 1,100 beds.

* * *

One of the speakers at the forty-ninth annual convention of the American Hospital Association, held in St. Louis, September 22 to 25, was Dr. Victor Johnson, director-elect of the Mayo Foundation for Medical Education and Research. Dr. Johnson spoke on "Medical Education in the Tax-supported Hospital."

* * *

Rising hospital expenses were explained to the Minneapolis public on September 4 by Dr. William A. O'Brien, chairman of the Minnesota Hospital Association's Council on Public Education, who pointed out that

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the hospitals are continually trying to find ways to cut costs while still maintaining high standards of service.

Dr. O'Brien described a ten-year cost study at an "average" hospital which showed that most expenses have more than doubled in the last decade.

"In 1938 the cost of operating this hospital was $6,400 a month," he said, "while today it is $13,730. Nursing service has increased from $1,750 a month in 1938 to $6,312 in 1947, dietary service from $1,087 to $2,768, laundry from $450 to $750, housekeeping from $390 to $824, administration from $904 to $1,598, and plant maintenance from $1,123 to $1,384 per month. Likewise, the hospital's payroll in 1938 amounted to $4,841 a month for sixty-five employes, but today totals $17,700 for 125 employes."

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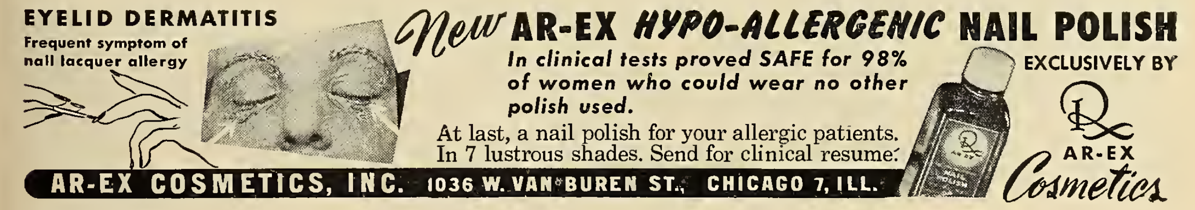
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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

INFANT NUTRITION. Fourth Edition. A Textbook of Infant Feeding, for Students and Practitioners of Medicine. P. C. Jeans, A.M., M.D., Professor of Pediatrics, College of Medicine, State University of Iowa; and Williams McKim Marrioll, B.S., M.D., late Professor of Pediatrics, Washington University School of Medicine; Physician in Chief, St. Louis Children's Hospital. 516 pages. Illus. Price, $6.50, cloth. St. Louis: C. V. Mosby Co., 1947.

OFFICE TREATMENT OF THE EYE. Elias Selinger, M.D., Attending ophthalmologist Mount Sinai, Cook County and Michael Reese Hospitals. 542 pages. Illus. Price, $7.75, cloth. Chicago: Year Book Publishers, 1947.

SYNOPSIS OF ALLERGY. Second Edition. Harry L. Alexander, A.B., M.D., Professor of Clinical Medicine, Washington University School of Medicine, St. Louis; editor of *Journal of Allergy*. 255 pages. Illus. Price $3.50, cloth. St. Louis: C. V. Mosby Co., 1947.

COMMUNICABLE DISEASES. Second Edition. Franklin H. Top, A.B., M.D., M.P.H., F.A.C.P., Medical Director Herman Kiefer Hospital, Clinical Professor of Preventive Medicine and Public Health, Wayne University College of Medicine, etc. 922 pages. Illus. Price $8.50, cloth. St. Louis: C. V. Mosby Co., 1947.

A HISTORY OF THE AMERICAN MEDICAL ASSOCIATION, 1847 to 1947. Morris Fishbein, M.D. 1226 pages. Illus. Price $10.00, cloth. Philadelphia: W. B. Saunders Co., 1947.

SYNOPSIS OF OBSTETRICS. Third Edition. Jennings C. Litzenberg, B.Sc., M.D., F.A.C.S., Professor Emeritus of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis. 416 pages. Illus. Price $5.50, cloth. St. Louis: C. V. Mosby Co., 1947.

RYPINS' MEDICAL LICENSURE EXAMINATIONS. Sixth Edition. Topical Summaries, questions and answers. Walter L. Bierring, M. D., F.A.C.P., M.R.C.P. Edin. (Hon.), editor. 690 pages. Price $6.00, cloth. Philadelphia: J. B. Lippincott Co., 1947.

FUNDAMENTALS OF PSYCHIATRY. Fourth Edition. Edward A. Strecher, M.D., Sc.D., LL.D., Litt.D., F.A.C.P., Professor of Psychiatry and Chairman of Department, Undergraduate and Graduate Schools of Medicine, University of Medicine, University of Pennsylvania; psychiatrist to Pennsylvania, Philadelphia and Germantown Hospitals, etc. 325 pages. Illus. Price $4.00, cloth. Philadelphia: J. B. Lippincott Co., 1947.

THE HOSPITAL ACT AND YOUR COMMUNITY. U. S. Public Health Service, Division of Hospital Facilities. Washington 25, D. C.: Government Printing Office, 1947. Single copies, Free. Quantities to 100 copies, 10c each; 100 or more, $7.50 per hundred.

For those interested in the hospital program, authorized last year by the Hospital Survey and Construction Act, this booklet tells in simple terms what the Act means to the individual, the community and the State. It should be especially valuable to any group or community that wants to build a hospital but does not know how to go about getting Federal aid for construction. Single copies are available free on request to the U. S. Public Health Service, Washington 25, D. C. Larger quantities may be purchased at 10 cents a copy of $7.50 per hundred from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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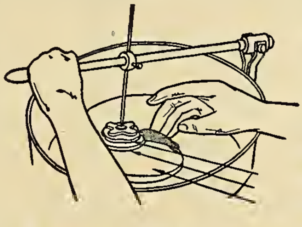

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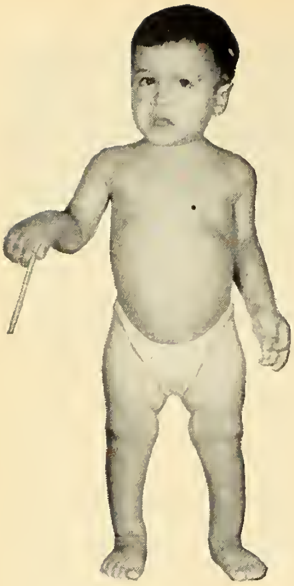

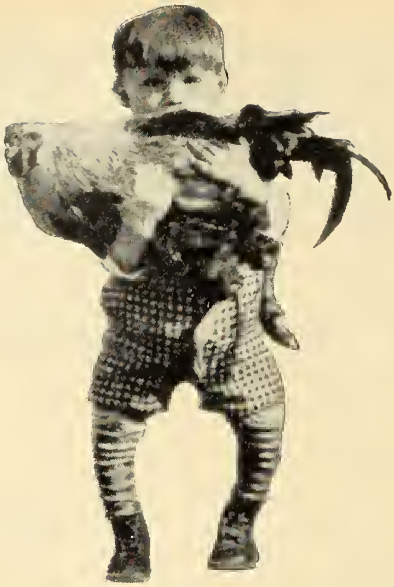

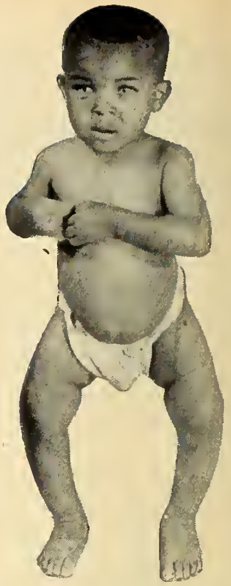

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Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 **November, 1947** **No. 11**

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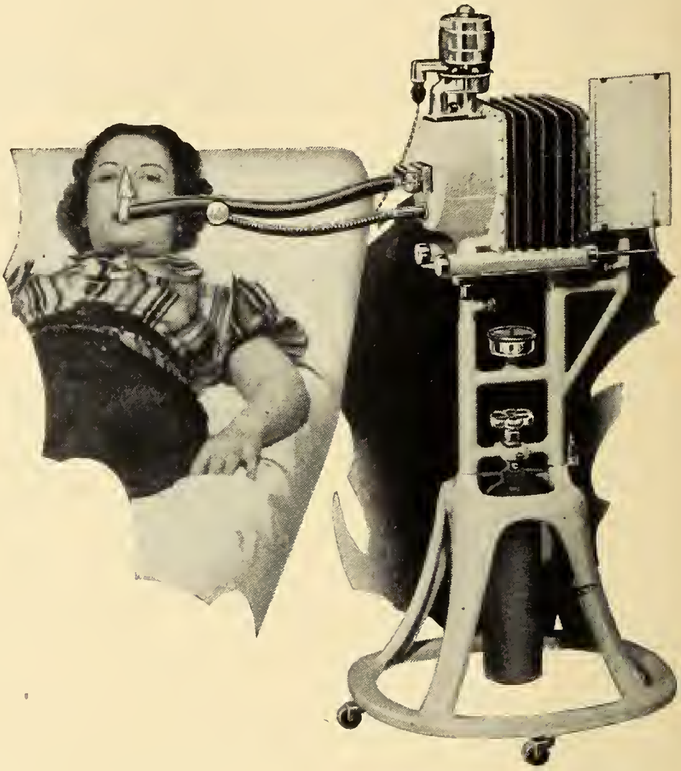

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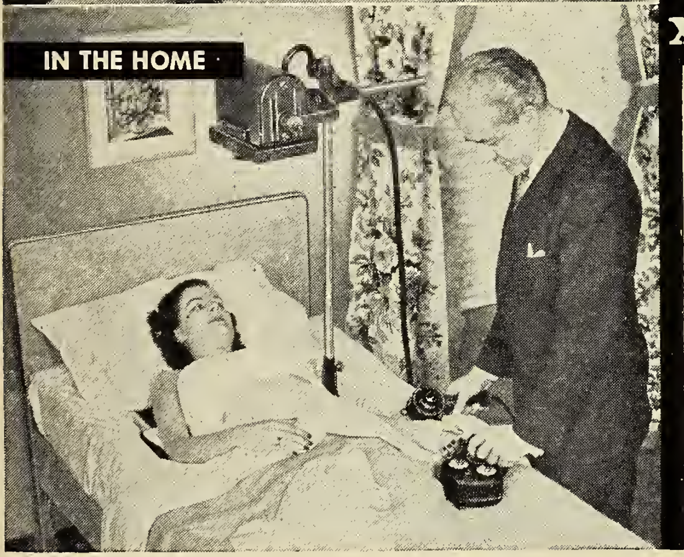

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[1] Human Fertility 10: 25 (Mar.) 1945.

[2] Warner, M. P.: J.A.M.A. 115: 279 (July 27) 1940.

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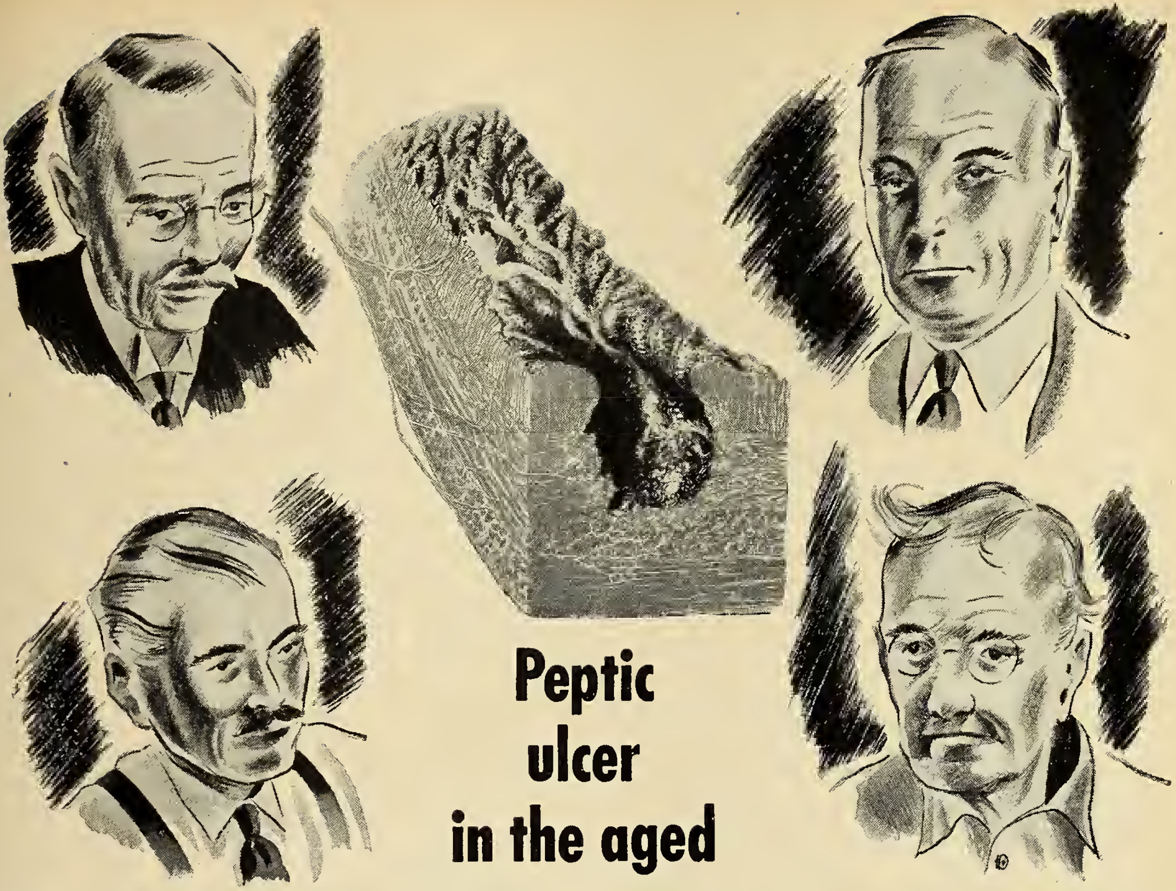

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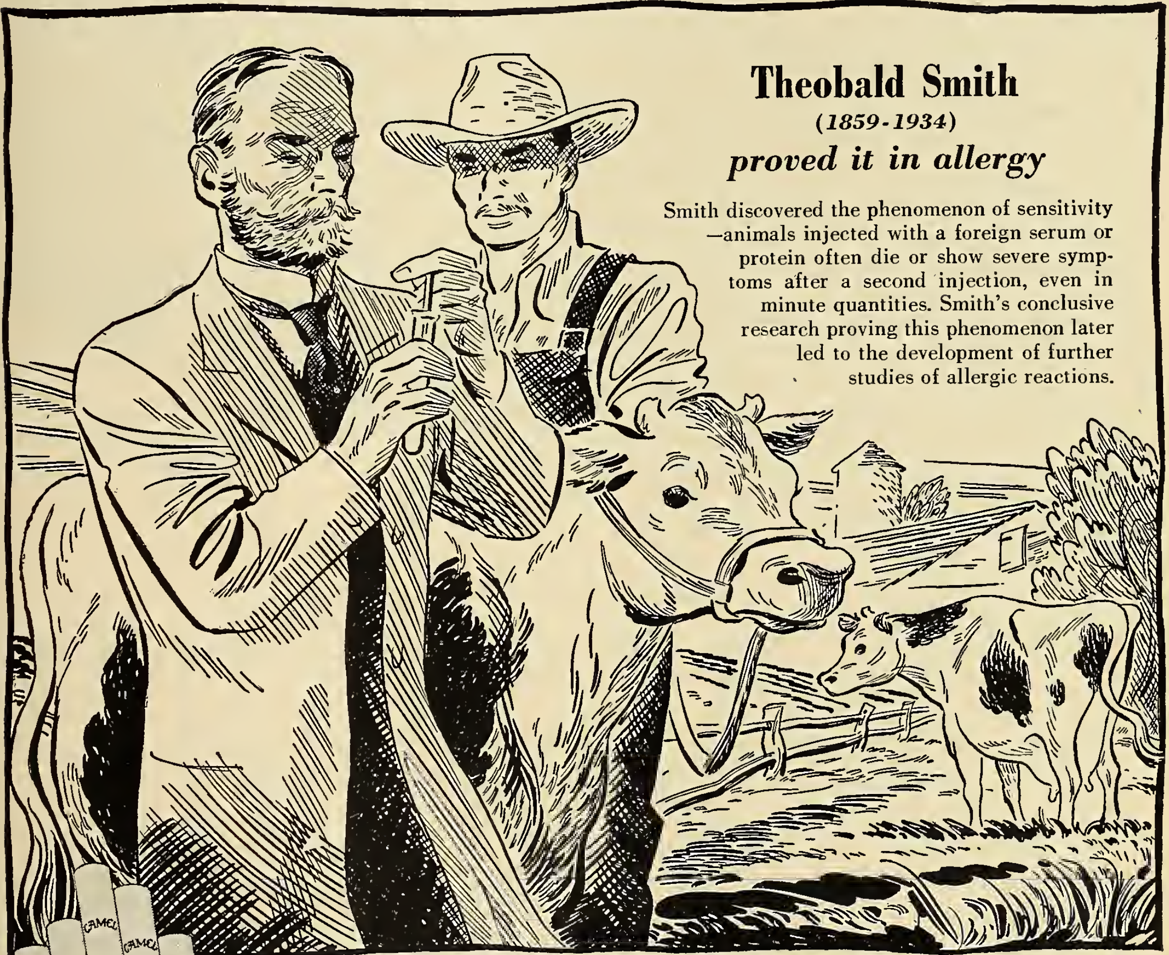

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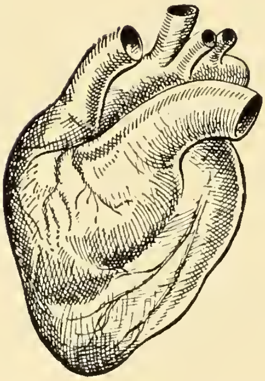

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*Harris, S.C.; Ivy, A.C., and Searle, L.M.: The Mechanism of Amphetamine-Induced Loss of Weight: *A Consideration of the Theory of Hunger and Appetite*, J.A.M.A. *134*:1468 (Aug. 23) 1947.

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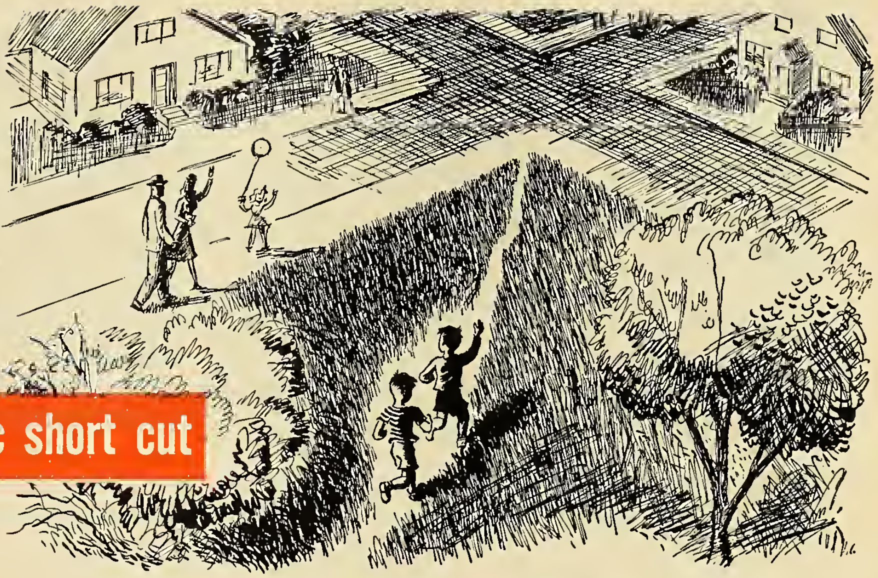

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1. Editorial: J. A. M. A. 121:346, 1943
2. Nadal, J. W.: Northwest Med. 46:444, 1947
3. Sprinz, H.: M. Clin. North America 30: 363, 1946
4. Brunschwig, A., Clark, D. E., and Corbin, N.: Mil. Surgeon 92:413, 1943

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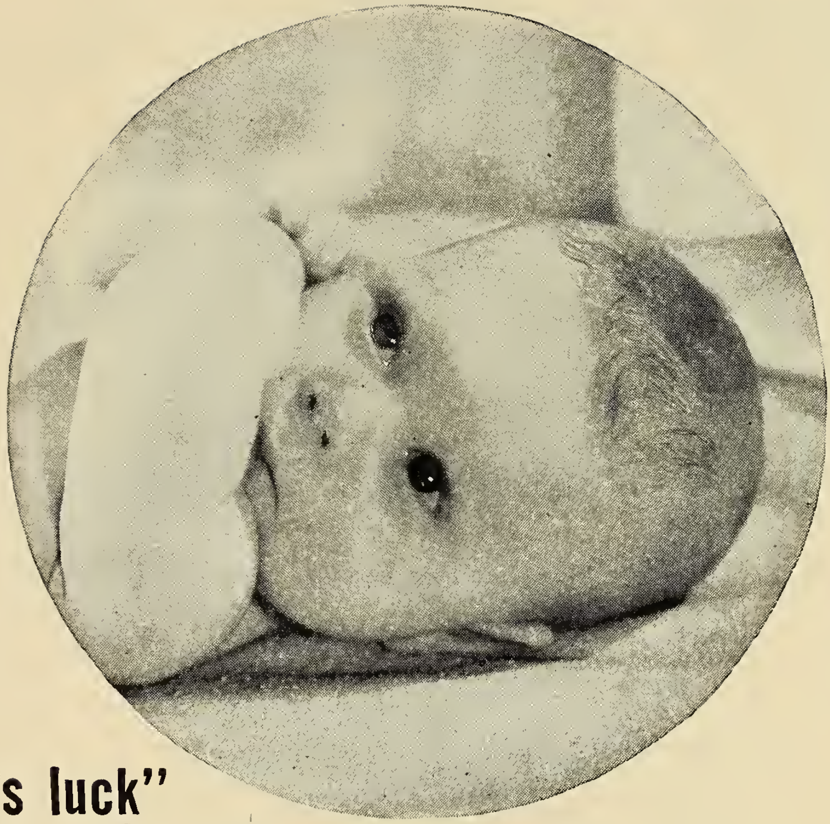

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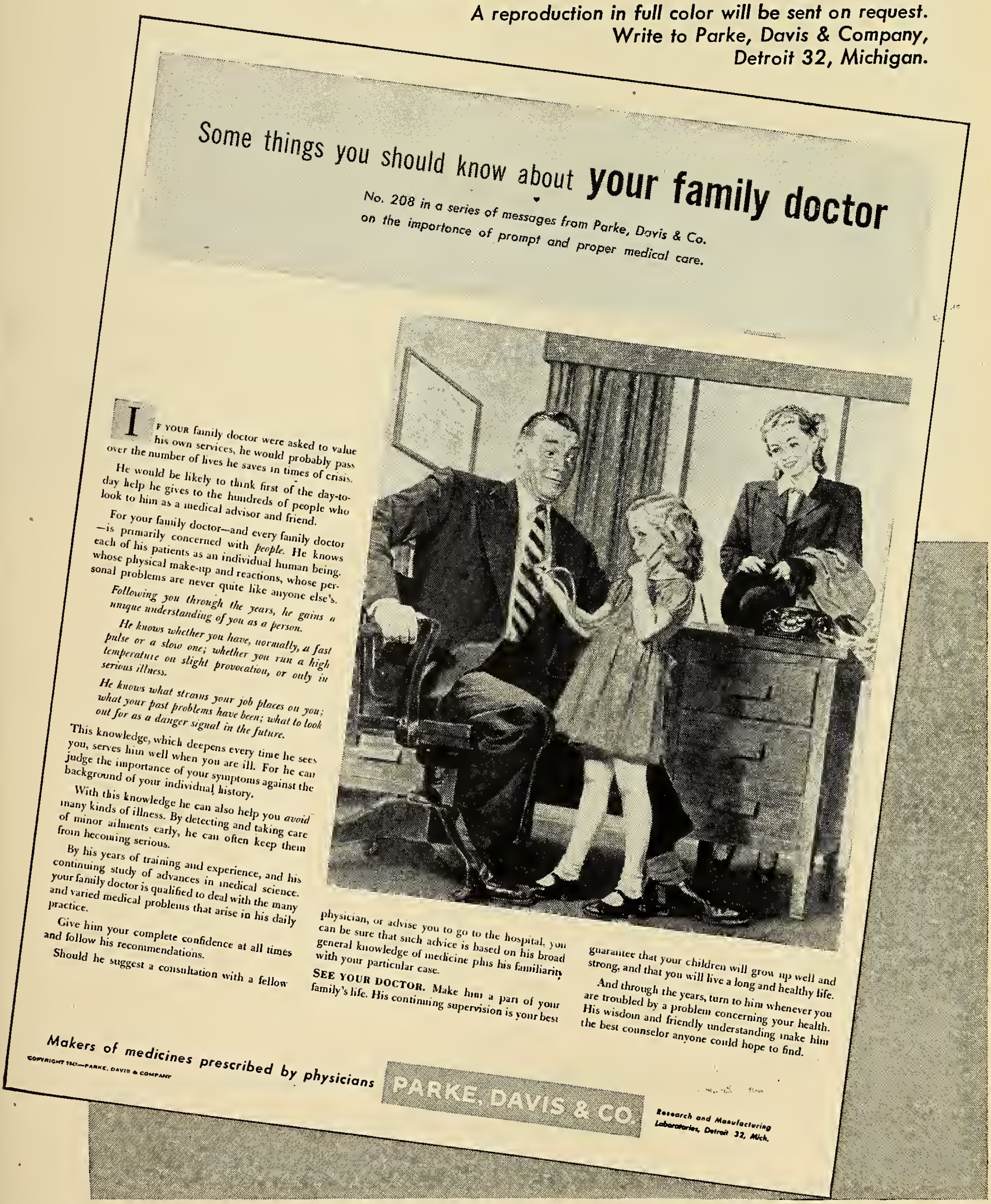

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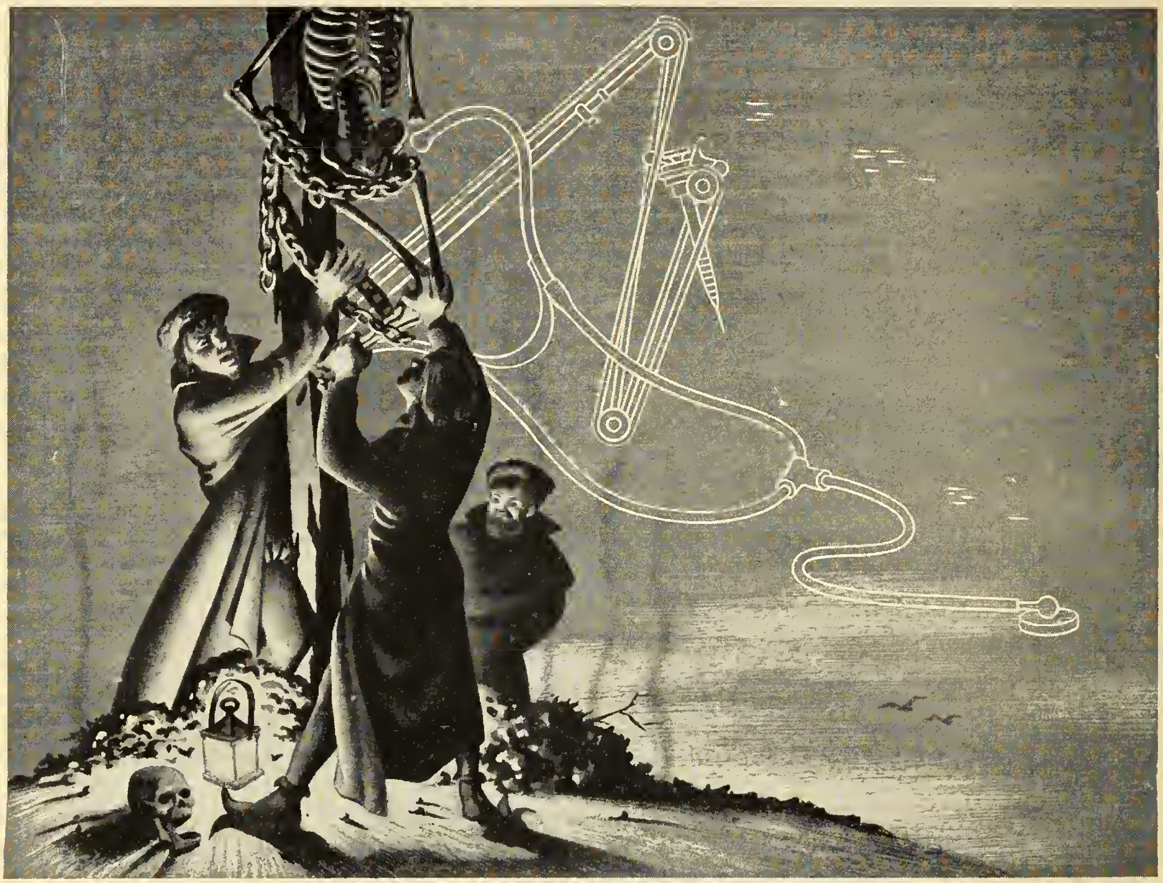

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

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EPIDEMIOLOGY AND RECENT DEVELOPMENTS IN POLIOMYELITIS

JOSEPH G. MOLNER, M.D.
Deputy Commissioner and Medical Director, Detroit Department of Health
Detroit, Michigan

POLIOMYELITIS as a disease has attracted the attention of lay individuals, laboratory workers and members of the medical profession for well over a century and a half. The recognition of the existence of the disease is noted by many as dating back to 1600 B.C. Actually, the first good clinical description of the disease is made by Underwood in a paper entitled "Debility of the Lower Extremities" published by J. Matthews in London, England, in 1789.

In recent years a great deal of interest has been manifest in this disease. This interest has centered around the mode of transmission of the disease, prevention and treatment. A great deal of progress has been made in these particular fields, but the sum total of our knowledge of the disease is still rather limited—limited at least from the point of view of practical application.

Etiology.—Although there are proponents of the bacterial etiology of the disease, it is generally recognized that the causative agent is a virus. There is also general agreement that the poliomyelitis virus is a neurotropic virus which probably is disseminated through the body by passage along the nerve fibers. More specifically, Toomey[16,17] believes that the virus travels best along nonmedullated or gray nerve fibers.

In 1909 Flexner and Lewis[7] described a virus as the etiological agent in this disease and described in detail their experimental work with the M. Rhesus monkey. By cerebral inoculation of macerated spinal cord tissue, experimental animals developed a disease closely simulating infantile paralysis. The isolation of this virus and experimental work herein described have been repeated many times since.

The Portal of Entry.—Although it is generally agreed that the virus of poliomyelitis is a neurotropic virus which enters the central nervous system by traveling along nerve tracts, there has been no agreement as to ways and means by which this virus reaches the nerve tracts. There are two concepts which may be mentioned as to the portal of entry of the virus, namely, the nasopharynx and the intestinal tract.

Toomey[16,17] is the principal proponent of the gastrointestinal route of entry. By experimental inoculation of the virus into the gastrointestinal tract, Toomey was able to produce a disease in monkeys which simulated poliomyelitis. However, he was obliged to create severe stagnation of the gastrointestinal tract before he could promote the development of this condition in his experimental animals. Other investigators are of the opinion that such unusual stagnation is probably nonexistent normally, and therefore the gastrointestinal work of Toomey and his associates should be looked upon as additional good scientific information without a great deal of practical application value.

Sabin and his associates[15] are proponents of the olfactory route of entry. This theory probably has more supporters than any other theory. Proponents of the theory point out that the virus has

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Read in Symposium on Management of Poliomyelitis at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

been isolated from the nasopharynx of patients and apparently healthy carriers; further, that the epidemiological characteristics of the disease suggests a droplet type of infection. Supporters of this theory also point out the ease with which entrance into the olfactory system might be brought about through the nasopharynx. Certainly the virus has been isolated in acute cases from the nasopharynx. All of these facts taken together are strongly suggestive of the nasopharyngeal route of entry of the virus.

Escape.—The escape and liberation of the virus from the human body have been repeatedly studied and innumerable publications are available for study.[11] The virus of poliomyelitis has been isolated from the stools and nasopharynx of apparently healthy carriers as well as persons acutely ill with the disease. The virus in the nasopharynx is usually present only for relatively short periods of time. The virus, however, may be present in the gastrointestinal tract weeks before the onset of clinical symptoms[5] and for months after the acute symptoms have subsided. There is, of course, a question which arises in the minds of investigators as to whether or not the primary localization of the virus is in the upper respiratory tract and that the gastrointestinal localization is secondary and is brought about by the swallowing of sputum contaminated with the virus.

Reservoirs.—Although extensive research work has been directed at the recognition of reservoirs of this virus, there is but one definite reservoir known, namely, that of the human being. The reported recovery of the virus of poliomyelitis from a mouse found dead in a home where there had been a case of poliomyelitis only adds greater confusion to an already confused situation. To the best of the speaker's knowledge, this finding has not been repeated. Fowl, birds, rodents and various other animals have been examined but without a satisfactory recognition of the poliomyelitis virus.

The virus has been isolated from sewage[12] and it has been shown that it will resist[10] the effect of chlorine in concentrations of 0.5 per 1,000,000 parts for over a half hour. There have been variously reported outbreaks which, according to the epidemiological evidence, would tend to incriminate food and milk, but all of these factors are affected by missing links of information and certainly it has been repeatedly pointed out that the pattern of behavior of poliomyelitis is such that it does not correspond with the characteristic behavior of food- or water-borne infections.

The recognition of the virus in the nasopharyngeal secretions of persons affected with the disease and the recognition of the virus in sewage[12,13,14] and its presence in the stools of apparently healthy persons[11] lend emphasis to the significance of the human reservoir. The repeated recognition of the virus in apparently healthy human carriers and the rapid development of the carrier state is reported by Brown, Francis and Pearson. Certainly the report of the recognition of the virus of poliomyelitis in the stool of an apparently healthy individual, nineteen days before the development of clinical symptoms,[5] is a notable contribution to the knowledge of poliomyelitis.

Mode of Transmission.—There is no definite agreement as to the mode of transmission of this disease. The virus of poliomyelitis has been isolated from the nasopharyngeal washings of apparently healthy individuals as well as those suffering from the disease. It has been isolated from sewage, from food and from the gastrointestinal tract of flies. This wealth of confusing facts only lends further confusion to the possible ways and means by which this disease is transmitted. It has also been proposed, only because of some epidemiological evidence, that possibly the disease is transmitted by insect vectors.

Certainly the epidemiological characteristics of the disease are such that they do not coincide with water- or food-borne diseases. Water- and food-borne epidemics are usually explosive in nature and affect large numbers of people simultaneously. Usually epidemics of poliomyelitis are progressive, develop gradually, show evidences of radial spread and reach their peaks within several weeks from the date of onset. The distribution of cases within the area affected is scattered with occasional aggregation, while in water-borne epidemics the distribution is somewhat more uniform. The attack rate of poliomyelitis in urban epidemics seldom exceeds one per thousand, and in rural epidemics the attack rates seldom exceed three per thousand. In food- and water-borne outbreaks the attack rate among exposed persons is usually much higher.

One cannot too emphatically discount the food and water bases as the modes of transmission because, as has been noted many times, the rate of infection with poliomyelitis virus probably far exceeds the incidence of reported cases. Proponents of the food- and water-borne mode of transmission therefore have this very important argument in their favor.

Probably the oldest and the best theory of the mode of transmission of poliomyelitis is that of person-to-person contact and droplet infection. Certainly the number of persons succumbing to the disease who have had contact with other cases is statistically significant. In investigation which has been carried on, evidence of contact with cases has been reported as high as 60 to 80 per cent. There are contradictory points to this method of transmission. The low secondary attack rate, intra, and extra-familially, is certainly suggestive of some important extrinsic or intrinsic factors limiting the occurrence of secondary cases. There is also the important fact that additional cases in families and households may develop in subsequent years in persons who escaped the first exposure.

Age, Sex, and Race Distribution.—The disease affects primarily persons between the ages of five and fourteen years of age, with a reasonably high incidence under four and with greatest concentration of cases between five and nine years. The disease, however, does affect persons of all ages, and the writer has had the experience of seeing a patient seventy years of age and has seen poliomyelitis in a newborn infant.

By sex, the distribution of the disease shows a somewhat greater incidence among males than among females, the ratio being approximately 1.4 males to one female. A great deal has been said and written about the racial distribution of poliomyelitis, depending almost entirely upon the section of the community or section of the country which is affected. The writer and his associates have not been able to show any difference in the race distribution of poliomyelitis. In individual epidemics difference of significant amount has not been noted, and over a period of many years the attack rate among Negroes and whites is approximately the same. The differences which have been noted in attack rate by race were due to geographic or area location of the epidemic.

The rural as against the urban incidence of the disease is noteworthy. In the most severe urban outbreaks the incidence of the disease seldom exceeds one per 1,000 population while in rural areas when epidemics occur the attack rates are two or three times as great as in urban areas. As a matter of fact, the actual incidence of the disease is much greater in rural areas than in urban. The rural incidence of poliomyelitis is so much greater that it is frequently referred to as primarily a rural disease. The Henderson County outbreak of 1945 in Tennessee is a good illustration of this observation.

There is a definite seasonal variation of the disease. It has been repeatedly noted that poliomyelitis has an apparent selective occurrence both as to season and individuals. Epidemics seem to occur in summer and early fall, and, as previously noted, clinical poliomyelitis affects but a very few persons who live in the epidemic area.

Seasonal Variation.—The seasonal variation is of significant epidemiological importance because coupled with this seasonal variation is the fact that the incidence of paralytic disease in areas where seasonal changes are not so radical is considerably lower than in the more temperate climates where the seasons change and change radically. This has brought about the prognostication that possibily there is something in the physiology of the human being which in part at least is related to the possibility of successful and clinical invasion of the virus. In other words, the prognostication is that a certain percentage of the people in these areas fail to make adequate physiological adjustments with the varying climate and season, with the end result that the infection with poliomeylitis virus results in clinical disease. On the other hand, the person whose physiology follows a more favorable pattern of adjustment is infected but escapes clinical disease.

Predisposing Factors.—There is a great deal of evidence to suggest that there is a hereditary predisposition to poliomyelitis and that the clinical disease is prone to recur in families. This fact is proposed along with drawing attention to the fact that the incidence of secondary cases in households during the same epidemic is rather infrequent. In a survey of the incidence of poliomyelitis in families, Aycock pointed out that 51 per cent of the patients gave a history of disease among relatives while only 5 per cent of his controls gave a similar history.[2,3]

Further investigations by other workers, notably Adair and his associates,[1] confirm this familial predisposition to poliomyelitis. There have been attempts by Aycock and Draper to associate the disease with endocrine imbalance and to point out that certain institutional types[4] are more apt to acquire clinical poliomyelitis than are others. Aycock further suggests that susceptibility may reside in a subclinical endocrine difference, and, more particularly, a subclinical difference between periods of growth and development. These theories, needless to say, cannot be completely ignored but evidence to the contrary is proposed by other investigators.

Aycock also points out that there appears to be a predisposition to attacks of poliomyelitis among pregnant women. He noted that poliomyelitis is associated with pregnancy about four times as frequently as it would be expected in nonpregnant individuals. The closer examination of this relationship shows that the greatest risk occurs in the second and third trimester of pregnancy.[18]

Here again Aycock draws attention to the fact that this may be associated with some endocrine disturbance. Experiments have been attempted by Jungblut to associate the incidence of the disease with Vitamin C deficiency. Helm[9] has proposed that Vitamin B deficiency is the major factor accounting for increased susceptibility to the virus and Weaver in turn[19] in his experimentation with cotton rats was unable to show any relationship between Vitamin B deficiency and the poliomyelitis virus.

It is conceivable therefore that the endocrines and vitamins, or the lack of endocrines or vitamins, are associated with susceptibility to clinical poliomyelitis. If there is an intimate association, the method of its operation is not clearly understood.

Certainly from the overwhelming amount of information which is available, it is obvious that the incidence of infection with poliomyelitis virus far exceeds the reported incidence of clinical disease.

It has also been noted by some investigators that trauma, overexertion and exhaustion are predisposing to clinical poliomyelitis. One must question this proposition because although trauma may be very definite, the degree of shock may be variable, or at least the interpretation placed upon the severity of such trauma by the investigator is variable. Also, exhaustion and overexertion are relative terms. In the Detroit studies virtually no correlation existed between these factors and the incidence of the disease. The increased incidence of severe poliomyelitis following recent tonsillectomy is quite significant. For example, there is evidence to indicate that children who have recently undergone tonsillectomy develop bulbar poliomyelitis much more frequently than those who have not.[6] There are, of course, persons who do not agree with this. But the evidence is overwhelmingly in favor of the proponents of the predisposing effect of tonsillectomy to the development of bulbar poliomyelitis.[8]

Carriers.—As has been previously noted, the incidence of infection with poliomyelitis virus far exceeds the incidence of clinical cases.[5,11] The writer and his associates were able to show that in one outbreak, involving an institution caring for children between infancy and ten years of age, several individuals without any clinical symptoms were found to be carriers of the virus of poliomyelitis. A nurse and a physician, in addition to several of the children, who had intimate contact with cases, were found to be positive. It seems quite possible that those with abortive and subclinical disease may carry the virus for varying periods of time. Brown and his associates, for example, were able to show that a person who developed clinical poliomyelitis had actually harbored the virus of poliomyelitis in his stools nineteen days before the onset of the first clinical symptoms.

Prevention.—The principles of prevention of poliomyelitis have varied many times even within the past decade. Vaccines have been developed which have been most unsuccessful. Prophylactic spraying of the nasopharynx with various and sundry chemicals has proved to be a total failure. As a matter of fact, there are observers who believe that both the vaccine and the nasal spraying had actually the opposite effect of that which was expected.

The closing of schools, the avoidance of crowds and the isolation of the patient and contacts appear to have the effect of only a placebo. Certainly the wide and general distribution of the virus in nature and among humans particularly

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THE SICK CHILD IN POLIOMYELITIS

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THE 1946 outbreak of poliomyelitis furnished a serious challenge to the physicians of Minnesota. The physician became the initiator and co-ordinator of medical care, nursing care, physical therapy, psychotherapy, and orthopedic care in 2,877 cases between May and December. Although 222 (7.7 per cent) of these patients died, the untiring efforts of the medical and nursing profession saved many lives and ameliorated great suffering.

It is the purpose of this presentation to discuss some of the more important responsibilities of the physician in the care of the sick child with poliomyelitis. The opinions of contemporary workers in this field have been drawn on freely.

As Stimson[9] has pointed out, "In the average spinal case with involvement of a leg or an arm, co-ordination of the patient's care becomes a matter of relative routine. A schedule of rest and relaxation, of proper nursing care, and of measures to combat increased muscle tension should be quickly and adequately instituted" in the hands of well-trained personnel. The management of special manifestations in this disease requires experience, judgment and the skill of many workers. The symptoms of greatest importance are those seen in the patient with bulbar or intercostal paresis or paralysis.

In 1946 between May and December, 107 cases were admitted to the University Hospital and 265 cases were admitted to the Minneapolis General Hospital, a total of 372 patients, in whom a greater or lesser degree of bulbar involvement was exhibited. In addition to symptoms such as fever, prostration, and toxemia, these patients had dysphagia, nasal regurgitation, voice change, palatine weakness with lost gag reflex, pooling of mucus in the oropharynx and the airways, pulse changes, hypertension, and pallor associated with varying degrees of cyanosis.

Grulee,[2] reviewing the cases at the University Hospital, emphasized the fact that heretofore attention had been primarily focused on morbidity instead of mortality in poliomyelitis when practically all of the deaths occur in the bulbar group. He correctly stressed the proper management of the bulbar patient since almost 100 per cent of the polio deaths occurred in the bulbar group, which comprised only 23 per cent of the total patients. In contrast, almost all of those with bulbar involvement who survived recovered completely.

In the care of bulbar cases, the factors deserving special consideration may be listed as follows:

1. Psychological reassurance.
2. Fluid and electrolyte balance.
3. Optimum nutrition.
4. Prevention of aspiration.
    - (a) Posture
    - (b) Suction
    - (c) Tracheotomy
    - (d) Avoidance of respirator except in the high spinal type.
5. Oxygenation.
6. Adjuvants.
    - (a) Avoidance of bladder and bowel retention.
    - (b) Reduction of intracranial pressure.
    - (c) Prophylaxis against infection.
        - (1) Superimposed contagion (measles, pertussis, streptococcal, et cetera).
        - (2) Pneumonia, genito-urinary, et cetera.
    - (d) Supportive measures, i.e., caffeine, et cetera.

Anoxic patients were especially in need of reassurance and the inspiring influence of a doctor.

Dr. Albert Schroeder,[15] fellow in pediatrics at the University and Minneapolis General Hospital, one of the many who worked day and night during the outbreak, has summarized the psychological needs and care in a recent report. "To aid in providing good psychological environment, patients having a like involvement were grouped in wards, and a serious effort was made to become familiar with each patient. These children were not allowed to dwell on their weakness, stiffness, or paralysis, but their interest was transferred to other thoughts of environment and ward activity. By explanation and demonstration it was found possible to teach all but a few of the patients to use a bulb syringe or water suction to aspirate secretions pooled in the pharynx. With more instruction some patients learned to pass their own gavage tubes. These achievements and others, such

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as initial accomplishment of swallowing, maintenance of recumbancy during packing, and co-operation in exercises, were generously praised by the nurses and physicians before the patient's ward mates."

Disturbances of fluid equilibrium in the sick child with poliomyelitis are especially important during the acute stage. This is true because of the relatively greater susceptibility of children to the effects of changes in volume and character of body water.

Optimum nutrition, meaning an optimum of calories, food elements, minerals, and vitamins have recently been stressed in disease. Cannon[1] and others have shown that by omitting essential amino acids, antigenic response is inhibited and even abolished. Spies,[7] Smith,[6] and Stare[8] have demonstrated that body stores cannot meet the nutritional demands of starvation. In bulbar poliomyelitis, relative starvation is inevitable and more or less a part of the disease.

At the onset of the epidemic, the dysphagic patients were provided with fluids and part of their nutritional requirements parenterally. However, the inadequacy of this treatment became more and more apparent and its use induced apprehension on the part of the children and made them less co-operative to the physical therapy.

The problem of nutrition in patients who were unable to swallow for long periods of time was of major importance. The use of a gavage tube, using No. 12 to No. 16 French tubes, proved to be an easy solution, since the patient with dysphagia and a depressed gag reflex experienced no particular discomfort from the passage of the tube. The procedure was explained to the children before the initial insertion, and they were assured that it was only for temporary expediency. Gavage feedings were instituted on patients who had marked dysphagia or complete inability to swallow. Most of the patients co-operated in the procedure, and many were proud of their ability to pass the tube themselves. The dangers often referred to in the use of the gavage tube, such as aspiration pneumonia and aspiration asphyxia were not encountered in this series.

Special formulas, high in calories and adequate in protein, minerals, and vitamins were administered by tube in four daily feedings. The high carbohydrate and protein content in the feeding which might be expected to produce an alimentary disturbance seemed to improve elimination which is prone to be sluggish in this disease. With the slow partial return of the function of swallowing, oral supplements of liquids and then pureed and soft foods were added to the gavage feeding.

In those children where difficulty was encountered in gavaging by an easily aroused gag reflex, and in all who were deeply lethargic or comatose, infusions of plasma and amino acid-glucose (fortified Hartmans, et cetera) solutions were used in preference to the tubing.

The initial swallowing of liquids was best accomplished by keeping the child in a supine position. After fluid from a rubber-tipped dropper had been injected into his mouth, the child was instructed to close his lips tightly, breathe through his nose, hold his nose, and then swallow. He was encouraged and praised by the staff for this accomplishment, and then was allowed to try pureed foods in the same manner after a period of time. The upright position worked best for this latter achievement.

Loss of body fluids due to the profuse sweating caused by the hot packs, also resulted in the need of sodium chloride. Replacement was best accomplished by proctoclysis, using 5 per cent glucose in normal saline. Since this disease is accompanied by intestinal atonia, this was readily accomplished, and 400 to 800 c.c. daily were retained.

Manifestations of respiratory disturbance, characterized by the restriction of respiration and oxygenation, are briefly outlined as follows:

1. Damage to the respiratory center.
2. Pharyngeal or laryngeal paralysis with its resultant accumulation of mucus in the airways.
3. Muscular "tightness" in the thoracic area which interferes with normal expansion and contraction.
4. Impaired peripheral respiratory innervation with anoxia as found in respiratory muscle paralysis (diaphragm and intercostals) seen in the high cervical involvement.

Since these factors may occur singly or in combinations, it is important for the physician to evaluate the needs of the patient. It is at this point that the judicious use of the respirator is of prime importance. The bulbar patient who can neither cough nor swallow will not benefit but will be placed in jeopardy by the use of the respirator. On the other hand, the high spinal patient with an extensive loss of innervation of the muscles of breathing often owes his life to the use of artificial respiration.

Posture and careful aspiration of mucus, administration of oxygen, tracheotomy, and occasional use of the respirator were methods which were used. Early recognition of anoxia by clinical means and more accurately later by oximeter were the most valuable weapons in directing therapy. Sabin[4] has stated that encephalitis is practically nonexistent in poliomyelitis and actually is a symptom-complex due to anoxia of the brain. Adequate oxygenation through a tracheotomy tube or cleared normal airways frequently brought about rapid and marked changes in the sensoriums.

Tracheotomy was one of the life-saving measures in combating anoxia and the trend during the course of the epidemic was to do this more often in well-selected cases. Criteria cited by Priest[3] and Goltz were:

1. Respiratory distress as evidenced by recurrent cyanosis, coarse rales in the chest and laryngeal stridor.
2. Excitement and unmanageability causing the patient to resist pharyngeal aspiration strenuously.
3. Stupor of degree sufficient to make the patient oblivious to accumulation of secretion in his airway.
4. Inability to cough effectively.
5. Pharyngeal pooling of mucus, vocal cord paralysis, or intralaryngeal hypesthesia demonstrable by laryngoscopy.

Forty-two tracheotomies were done on patients at the University and Minneapolis General Hospital, of whom twenty-five died. Most of those with fulminating course are included in this fatal group. Of 372 dysphagic patients, 284 lived.

The dramatic saving of life by means of suction, tracheotomy, and oxygenation was impressive in this series of almost 400 seriously ill patients. The newer ideas in physical therapy continued to be meritorious. Round-the-clock vigilance of the physician, the expert service furnished by the nurse and physiotherapist in conserving the physiological functions necessary to life, though not acclaimed in the public press, should be permanently documented as a tribute to the younger men of medicine who participated in this formidable task. Their teamwork resulted in the best care known for the sick child with poliomyelitis. Completely equipped centers with well-considered plans, staffed by personnel who have experience and a co-operative spirit, are the places of choice for the management of the critical case that it has been my privilege to discuss.

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ASKS AID IN NURSING CRISIS

Katharine J. Densford, president of the American Nurses' Association, has urged the governors of all forty-eight states to call state-wide conferences "at the earliest possible date" to consider concrete measures to resolve the nursing crisis created by increased demands for nursing service now facing the American public.

Pointing out that the nursing profession is united on a program of action, Miss Densford, in telegrams to each governor, called for effective action in every state of the union. Her message follows:

"I made a nation-wide telephone roll call from Minneapolis on October 20 to get the support and co-operation of the forty-eight presidents of the state nurses' associations. The ANA, representing 155,000 professional registered nurses, received whole-hearted support from the state association presidents on three major points of the ANA's program: (1) Make nursing care equally available to all by intensifying efforts of the ANA's counseling and placement service for the best possible use of available nursing service, and provide a continuing supply of nurses by promoting recruitment; (2) improve nurses' working conditions, rates of pay, personnel practices, and see that nurses share in the administration of nursing services; (3) protect the public by adequate legal control of nursing practice, both professional and practical.

"We in ANA are doing everything in our power to rouse the public to a clearer understanding of the nursing crisis, because nurses cannot singlehandedly solve the problem. Effective action is needed at once in every state of the Union. As president of the American Nurses' Association I am respectfully requesting the governors of each state to co-operate with us.

"Specifically, I ask you to call on the president of your state nurses' association and the head of every group interested in public health and public service, to meet at a state-wide conference under your auspices at the earliest possible date to consider concrete measures resolving the nursing crisis now facing the American public. I shall deeply appreciate a prompt reply from you indicating what co-operation you can give this public situation."

THE TREATMENT OF THE MUSCULAR AFTER-EFFECTS OF POLIOMYELITIS

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ACUTE anterior poliomyelitis is a disease which runs a rather short febrile course, usually lasting only a week or two; but during that febrile course enough damage may be inflicted upon the central nervous system so that there may result serious muscular after-effects requiring treatment for months or years, and permanent disability may ensue. These after-effects cannot be removed by medication, and at present we know of no effective methods for preventing them. Therefore, their treatment resolves itself into the solution of various mechanical problems. Each individual case is a problem unto itself and must be solved mechanically for that individual. *There is no routine treatment which is uniformly successful.* The basic mechanical factors which must be considered in solving these problems are three in number: namely, muscle shortening, muscle weakness or paralysis, and loss of muscular efficiency, often called incoordination.

Muscle Shortening

Muscle shortening is not an accurately descriptive term. Sometimes the muscle is actually shortened so that flexion contractures are present, but more commonly the condition could be described as a loss of normal extensibility of the muscle. In the past it has often been ascribed to muscle imbalance. Contrary to the situation implied by the ordinary concept of muscle imbalance, muscle shortening in my experience seems to have no relationship to muscle strength or weakness. It often begins very early in the course of the disease, even as early as the first day, and it may continue forever if not treated. On the other hand, muscle shortening sometimes appears slowly over a long period of time—as much as a week or more in some instances. It may be present in a relatively strong muscle, in a relatively weak muscle, or in the opponent of either a strong or a weak muscle. Muscle shortening in the neck, back, and hamstrings seems to have no relationship to the number of cells in the spinal fluid. In the early stages of the disease, this shortening seems to be of neurogenic origin since it can be relaxed temporarily by spinal anesthesia and other anesthetics which induce muscular relaxation. After some months have passed, however, the shortening apparently changes from a neurogenic type to a peripheral type, so that it is probable that fibrotic changes have occurred in which, at this time, anesthesia does not produce relaxation. We have learned by experience that in order to obtain the best results, this muscle shortening must be combated at the earliest possible date, long before fibrosis has occurred. We begin the treatment immediately after the diagnosis has been made, even while the temperature is still elevated, and we have learned that the more vigorously we treat this symptom, the more likely we are to succeed in overcoming it.

The essential element in the treatment of muscle shortening is motion. If the patient has sufficient muscle strength to allow him to perform voluntary motion against gravity, activity alone will often cause relaxation of the muscle shortening. However, in those patients who are too weak to carry out motion actively, the motion must be performed for them passively. At first, attempts should be made to cause relaxation by motion within the limits of pain. However, if relaxation is not accomplished by such mild degrees of motion, it becomes necessary to use forced motion or stretching. This may be done even in the stage of isolation. It is important, however, that the physical therapist should have enough experience to be able to differentiate between forced motion, which is improving the range of motion, and forced motion which is decreasing the range of motion, because it is not infrequent that the pain associated with forced motion will cause an increase of shortening and therefore be harmful rather than helpful.

If pain is a potent factor and especially during the early stages of the disease, hot packs are a useful adjunct in the treatment of muscle shortening. They should be as hot as possible, but

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Read in Symposium on Management of Poliomyelitis at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 2, 1947.

also dry enough so that there are no droplets of water to cause burns. Experimentally, we have found that the packs can be applied at a temperature of 130-140° F. on the wards. They cool off rapidly, so that within five minutes after application the temperature of the pack is down to about 102°, after which it shades off gradually so that within fifteen minutes the temperature is approximately that of the body. These packs should be repeated as often as necessary for the individual patient. In fairly mild cases, in the early stages, the packs are usually changed once an hour; in the less severe cases, once every two hours; in the very severe cases, the packs may be changed as often as every two or three minutes.

One thing that should be stressed is that the packs should be extremely hot, hot enough so that the patient squirms, in order to be effective. It seems quite obvious to me that this is not a heat application in the true sense of the word; it is really a reflex stimulus, and it should be possible to obtain this reflex stimulus by simpler means. Research is being carried out to try to find these simpler means. There is some evidence to indicate that in some stages stretching alone may be as effective as hot packs plus stretching.

It should be emphasized that hot packs alone will not cause relaxation of the muscle shortening. In fact, hot packs may sometimes increase muscle tightness, rather than relax it. There are certain individuals in whom this has been shown very definitely to be true. The percentage of these individuals is rather small, but it is important that this possibility be recognized in a patient who is continually tightening in spite of apparently efficient treatment. If hot packs seem to increase the tightness, other types of heat may be used, such as hot baths, paraffin, fever therapy, or occasionally infra-red radiation or diathermy.

Several drugs have also been used for the purpose of relaxing muscle tightness. Prostigmine has been found to be useful in certain cases that do not respond to other types of therapy. It must be remembered, however, that prostigmine is not the complete answer to the relaxation of muscle tightness in poliomyelitis; its usefulness is definitely limited, and it is impossible to predict whether improvement will be obtained in any individual case. I do not recommend the routine use of prostigmine.

Curare has also been used and advocated for the relaxation of muscles in poliomyelitis. Curare is a drug which acts upon the myal side of the myoneural junction to prevent acetylcholine from causing contraction of the muscle. Therefore, it produces relaxation of muscle. For this reason it has been used extensively in surgery in order to get maximal muscle relaxation with a minimal amount of anesthetic. Its use in poliomyelitis has been advocated by Ransohoff and others in the last few years. Its usefulness has been predicated upon the fact that it relaxes normal muscle. In the case of poliomyelitis, however, there are apparently other processes entering into the causation of muscle tightness which are not always affected by curare. Therefore, we have found that curare often relaxes all the muscles except the ones which we want relaxed. However, it may be a useful adjunct in preventing the normal muscle fibers from resisting forced motion so that stretching may be more effective in the curarized muscle.

Some other drugs also have a similar effect. Among these are quinine, quinidine, and atropine. However, the side effects of these drugs are so pronounced that their usefulness is extremely limited, and they have not been investigated thoroughly as regards their effect in poliomyelitis.

If the attempts at relaxation of muscle tightness are unsuccessful, even though continued adequately for many months, it may become necessary to resort to more forceful procedures. Among these are the use of neurotripsy, with an air-hammer-like instrument, to break up the fibrosis in the muscle under anesthesia, or the use of stretching manipulation under anesthesia, or the use of tendon lengthening and other surgical procedures. It is my opinion, however, that these procedures should be used only as a last resort.

It may seem illogical that so much stress should be placed upon the restoration of adequate muscle length, especially in view of the fact that a majority of untrained normal individuals are unable to pass the required flexibility tests. It is essential that adequate muscle length be obtained in order to have maximal function of those muscles which are weak. If the antagonist of a weak muscle is short, it acts as a brake upon the weak muscle and may not allow the weak muscle to move the part through a full range of motion. It may thus make useful function impossible. As an example, may I quote the situation as regards the knee joint. It is commonly found that the hamstrings are shortened and the quadriceps is weak. This makes a situation which is incompatible with locomotion unless braces are used. A person with normal strength in the quadriceps may walk with his knee bent, but a person with a weak quadriceps cannot walk unless his knee is completely straight, in fact, unless it is slightly beyond a straight line so that there is a small amount of what may be termed normal recurvatum present in the knee. Thus it is imperative that the tightness of the hamstrings be completely released in order that such a patient may walk without a brace. This situation is not taken into account by the brace-makers at the present time. Nearly all such braces are made with the knee flexed slightly, only a few degrees, it is true, but that few degrees is enough so that if the patient wears a brace for a long enough time to allow tightening of the posterior capsule to occur, that patient can never walk without the brace, sometimes in spite of fair strength in the quadriceps.

Muscle Weakness

Muscle weakness may be due to destruction of anterior horn cells, to temporary loss of function of the motor nerve cells due to the presence of inflammation or other types of damage, or to factors of conduction higher in the central nervous system which interfere with normal function. If the anterior horn cell is destroyed, it never regenerates. If the anterior horn cell is damaged, it usually recovers function spontaneously. There is no known treatment which will increase the number or the activity of the lower motor neurons. Therefore, treatment of the anterior horn cell is of no avail.

There is no successful method of increasing the number of muscle fibers present in the body. We are born with the maximum number of muscle fibers that we will ever have. We may die with fewer muscle fibers, but not with more. Therefore, there is no way to increase muscle strength by increasing the number of muscle fibers.

The only method left by which muscle strength can be increased is to produce hypertrophy in those muscles which still have innervation. In order to accomplish this, it is necessary that the muscle contract actively, and the best method is by the normal nerve pathway. Electrical stimulation has never been found to be as effective as natural stimulation. The most effective method of causing hypertrophy of muscle fiber has been found to be the use of heavy resistance exercises, making the patient contract the muscle against a nearly maximal load. It is better to carry out such a motion only once or twice a day than to carry out an unresisted motion many times a day, for this purpose. Of course we must realize that in poliomyelitis there is an unusual situation where frequently the muscle itself is unable to lift even the weight of the extremity, let alone any load placed upon it. Therefore, maximal heavy resistance exercise may be performed merely by moving the extremity itself. Thus, walking with the extremely weak muscles is frequently the best type of heavy resistance exercise. It must be remembered, however, that the natural tendency of poliomyelitis is toward improvement; therefore, we must be very conservative in ascribing improvement in strength to any particular treatment.

Mention may be made here of a possible method of increasing muscle strength by nerve-crushing or neurotripsy as introduced by Billig and Van Harreveld. This is an attempt to use the well-known phenomenon of branching-out growth of nerve fibers following injury to produce re-innervation of previously denervated muscle fibers. It is not yet fully evaluated but some results have been promising.

Muscular Efficiency

The factor of muscular efficiency is difficult to define and difficult to explain, but in my opinion is extremely important, even more important than the development of muscle strength. Co-ordinated, rhythmic, muscular movements are produced by the interaction of many muscles, some stabilizing the part, some carrying out the motion, others relaxing gradually to pay out slack. This is all controlled by the central nervous system, and though a great deal of the control is exercised by the cerebellum, there is probably also a considerable amount exerted through the spinal cord. And of course the connections between the cerebellum and the anterior horn cells are mediated by other cells in the spinal cord. There is never less than a three-neuron arc between the cerebrum and the muscle, which means that there must be at least one internuncial cell involved in every motion. The so-called motor pattern is produced by this interaction of correlated neurons so that rhythmic movements are possible. This motor pattern is produced by the carrying out of motion, either passively or actively. At first great mental effort is required to carry out any skilled motion. As the motion is repeated over and over, it eventually becomes automatic, and then co-ordination has been secured to a maximum degree.

In poliomyelitis we have a knockout of certain cells controlling muscular action. We may also have some of the internuncial cells which are connected with co-ordination destroyed. The entire neuromuscular setup has been disturbed; therefore, the entire neuromuscular setup needs retraining. There has been a great deal of controversy concerning the function of various individual muscles, and many books have been written to detail the function of these muscles. However, from a practical point of view, in the retraining of the patient, it is necessary only to carry out the motions as desired. Muscles do not work independently, but in combination with each other in varying degrees. Therefore, if the part is used in the manner which is desired, the various correlating muscles and neurons will learn to interact with each other in such a manner as to produce the action which has been practiced. This constitutes rhythmic co-ordinated motion.

On the other hand, if the patient is allowed to substitute any muscle or muscle group in an abnormal manner, he will develop power in the stronger muscles and use these stronger muscles to excess. For instance, he may walk with his foot everted, and never develop power in the inverters because he is not using them. The best example of this situation is in flexion at the hip. The iliopsoas is ordinarily considered to be the prime flexor of the hip. However, the hip can be flexed with the sartorius, rectus femoris, and the adductors as well. Under normal circumstances, the psoas performs most of the function. However, with increased resistance, all of the other muscles are brought into play so that, if the flexor of the hip is strongly resisted, every muscle will be working to its maximum. In poliomyelitis, we frequently have the iliopsoas very weak. Then in order to move the weight of the extremity, the sartorius, rectus femoris, and adductors may come into play much more prominently than normal. It is true that these muscles can flex the hip and many people rely upon increasing their power in order to use the hip flexion to its maximum. However, it is also true that if the psoas is not exercised, it will not increase its strength. Therefore, it is my opinion that the training should be done to decrease emphasis on the muscles other than the psoas and to try to increase the emphasis on the weak psoas, thus promoting increase in strength of the weak psoas which would not occur if effort were not made to move it.

I feel that the carrying out of motion in the nearest possible approach to the normal manner is the most important part of the treatment, and I am perfectly willing to sacrifice the development of maximal strength in order to have smooth, rhythmic function in as normal a manner as possible. Artificial support and braces are to be avoided in so far as possible. Occasionally it may be necessary to use some form of support in order to prevent an excessive back-knee or in order to prevent rotation of the foot in such a manner that walking is impossible. However, the number of braces to be used will be very, very small, if proper attention is paid to the foregoing factors.

NATIONAL HEARING WEEK, NOVEMBER 9-15

Three million children in the United States have a hearing loss, and millions of adults are already hard of hearing, according to Dr. C. Stewart Nash, president of the American Hearing Society, Washington, D. C. The national organization was joined by its 120 local chapters throughout the country in the observance of National Hearing Week, November 9-15.

"Authorities estimate that one out of every ten persons in America has a hearing loss, ranging from a slight loss to almost total deafness. The social and mental effects of this hearing loss can do much to warp the personality of a growing child, and in addition may prove an effective bar to the child's making a success of later life," says Dr. Nash. He points out the necessity for parents and teachers to watch children carefully for any signs of hearing loss, especially after illness involving the nasal passages, ears or throat.

"Prompt attention by a competent otologist is necessary where such a hearing loss is suspected," Dr. Nash declares. "Inattention, falling grades in school, a tendency to shun the company of other persons are often indications of a beginning hearing loss. The majority of people with serious hearing defects need never have reached that stage if the trouble had been checked in its incipient state."

Dr. Nash recommended a vigorous hearing conservation program to be put in effect in the schools. This program includes periodic hearing tests, medical examinations followed by prompt medical attention if any impairment is discovered, and adequate education and rehabilitation for those with handicapping hearing loss.

RECENT ADVANCES IN THE MANAGEMENT OF EAR, NOSE AND THROAT PROBLEMS

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WE ARE all familiar with the benefit otology has obtained through the use of sulfonamides and antibiotics. Let us first look into the problem of the more commonly called "sulfa" drugs. They made their entry about ten years ago, and are now used for all kinds of infectious diseases, including infections of the ear. However, they should not be used indiscriminately.

Infections of the Middle Ear

Hadjopoulos and Bell[4] stated that there are two types of infections of the middle ear. One of them is caused by an obligate aerobe, and produces an infection limited by the amount of oxygen present in the spaces of the middle ear when inflammatory swelling closes the eustachian tube. Such an infection often is characterized by a violent onset of pain in the affected ear. Spontaneous rupture or myringotomy results in almost immediate subsidence of symptoms, and the secretions dry up within a few days without any treatment.

Probably, however, in the majority of cases, the infection is of the second type; that is, it arises by invasion of a facultative anaerobe which might reach the middle ear and mastoid process either directly through the tube or along the submucosal lymphatic vessels of the eustachian tube. This type of organism is able to multiply in the presence of a very low oxygen tension, and it produces a more dangerous infection of the middle ear and mastoid process than might otherwise occur. At the onset, there might be marked tenderness over the mastoid. If it looks as if mastoiditis might develop, both sulfonamide compounds and penicillin should be administered immediately. The medication should be continued for several days after the discharge has stopped.

During the past several years there has been no severe mastoid disease, and the tendency is to give the sulfonamide drugs and penicillin all the credit for this situation. We know, however, that streptococci and pneumococci may vary in virulence from year to year. Results of studies carried out by Kopetzky and Hadjopoulos[7] would tend to support this view. They found that in acute mastoiditis caused by hemolytic streptococci variations in the severity of the infection and also in the mortality rate occurred from year to year. For a period of several years the variations were characterized by regular periodicity, and the authors suggested that a major cycle consists of a period of five to six years.

For example, at the Mayo Clinic we have lately seen several patients with surgical mastoiditis arising from influenza and measles contracted during a local epidemic. The mastoiditis in these cases became so severe as to require surgical treatment in spite of adequate sulfonamide and penicillin therapy that had been instituted at the very onset of the infection. So far as biologic resistance is concerned, it is now an established fact that immunity to infection does not develop when the infection is terminated by chemotherapy or antibiotic agents. I am sure we all have experienced this sad fact. It is especially annoying when it occurs among babies with infections of the upper part of the respiratory tract. As soon as one infection has been terminated by these means, another one starts right away.

I should like to make a plea that physicians do not consider patients all but cured after having started to administer chemotherapy and antibiotics. At the Mayo Clinic, we feel that we have encountered more patients with serious mastoiditis and complications than previously. Many of these patients had been receiving adequate sulfonamide therapy and then began to receive penicillin. The "masking" effect of these drugs is an important thing to recognize. "Masking" is a poor term; perhaps we should say "change of symptoms," a change which must be recognized by the surgeon. Other workers, such as Kopetzky[6] have observed that since sulfonamide drugs have been available, many more patients come to hospitals suffering from epidural abscesses than was previously the case.

Otitic meningitis is caused by either acute or chronic infections in the middle ear or mastoid process. Before the advent of chemotherapy this

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disease had a very poor prognosis. Now the chance of cure is almost 100 per cent if the treatment is not started too late. Septicemia caused by infection of the ear or its complication, thrombophlebitis of the sigmoid sinuses, now can be attacked successfully by combined chemotherapy and surgery. Abscess of the brain secondary to disease of the ear also has a better prognosis than formerly.

Ménière's Disease

Ménière's disease has received much attention lately. At the Mayo Clinic, Dr. H. L. Williams prefers to designate this disease as "endolymphatic hydrops" because in some reported cases gross dilatation of the endolymphatic system and degenerative changes of the organ of Corti were the main findings at necropsy. I shall not burden you with etiology except to say that Ménière's disease probably has an allergic background. The reaction is not of the antigen-antibody type; the condition might belong in a group of the so-called physical allergies which is intimately connected with disturbed permeability of cell membranes and disturbed electrolytic metabolism.

Histamine is still used in the treatment of Ménière's disease. Horton treated 270 patients with histamine (1 grain or 0.065 gm. of histamine base in 250 to 500 c.c. of isotonic solution of sodium chloride). Seventy per cent obtained complete remission, with improvement of hearing in 40 per cent. Many of these patients suffered remissions when treatment was discontinued in a month to a year. Lately, at the clinic, we have used a combination of nicotinic acid and potassium nitrate, with good effects. All treatments aim at control of fluid metabolism, correction of balance in the tissue fluids and production of vigorous vasodilation.

When medical management does not control the dizziness, surgical treatment can be attempted. For a long time, only section of the eighth cranial nerve was done. In this type of surgery there is always a certain risk, since the surgeon must proceed intracranially in order to reach the nerve. Lately, transmastoid labyrinthotomy has come into favor. This operation was suggested by Lake[9] in 1906. Since then, sporadic reports of it appeared until Day[2] and Cawthorne[1] reported a series in which labyrinthotomy had been done for Ménière's disease. At the Mayo Clinic nineteen patients who had Ménière's disease have undergone labyrinthotomy as outlined by Day.

In the selection of patients for surgery only those whose hearing in the diseased ear is not useful should be chosen, since in our cases the hearing disappeared entirely in the operated ear. Patients who have almost normal or fairly normal hearing should have the benefits of long and fair trial of conservative measures. The operation itself is fairly simple. We use a postauricular incision. As much of the mastoid process is exenterated as is possible, so as to provide enough operative room. The horizontal semicircular canal is exposed to view all the way anteriorly to the junction with the anterior vertical canal. With an electrically driven burr, a small hole is made in the horizontal canal about 2 mm. posterior to the ampulla. A thin, curved electrode is inserted into the vestibule and light cautery is used. Transitory facial palsy often develops among these patients. It disappears within two weeks to a month. Penicillin is used during convalescence to prevent infection.

Ménière's disease can occur in all age groups, but it is more common in the later decades of life. We had one patient recently whose condition was very interesting. Gooch and I[3] have reported the case. The patient, a deaf-mute, had had episodes of dizziness all his life, and had tried all kinds of treatment, without result. Bilateral destructive labyrinthotomy was done, since we did not know which ear was responsible for the dizziness. The operation was performed about a year ago and so far the patient has been doing remarkably well. He is carrying on his work satisfactorily as a printer.

Otosclerosis

The greatest advance in the treatment of a certain type of deafness is the fenestration operation for otosclerosis. This operation is indicated only in certain selected cases of otosclerosis in which bone conduction is good and in which there is little if any damage to the acoustic nerve. The diagnosis of otosclerosis has to be made by exclusion. The onset of loss of hearing usually is very insidious; most often hearing begins to diminish when the patient is between ten and twenty years old. These patients often hear better in noisy places. A familial history of deafness can be obtained in about 40 per cent of cases. Otosclerosis is a disease in which pathologic changes occur in the auditory capsule. Osteoclasts destroy the bone of the auditory capsule and the destroyed region is rebuilt in a disorderly manner by osteoblasts. When this process causes ankylosis of the stapediovestibular joint, deafness will result. Otosclerosis is primarily a disease of bone, and stapedial ankylosis is an incidental complication that occurs occasionally. In a study of the temporal bone, it was found that stapedial ankylosis occurred in only ten of eighty-one ears examined in which otosclerosis was present. Otosclerosis is only a histologic diagnosis, and if the diagnosis is to be made for the living patient, the term must be modified to "clinical otosclerosis." The diagnosis of clinical otosclerosis can be arrived at with reasonable accuracy by exclusion, on the basis of the history and results of examination, of all other conditions likely to produce a conduction type of deafness.

The fenestration operation is applicable only to patients who have clinical otosclerosis and in whom the hearing reserve is so great that release of it will rehabilitate the patient socially. Lempert, who perfected the fenestration operation, reported that up to the time of his report 33 per cent of patients who had been operated on six years or more previously had been rehabilitated socially and economically through restoration of hearing to normal conversational levels. Because of recent improvement in technique, he considered that in approximately 70 to 75 per cent of cases restoration of hearing to normal conversational levels could be secured in the ear on which operation is performed. The fenestra rarely closes if it has remained open for a year. In 347 fenestration operations performed at the Mayo Clinic, we have been able to secure good early results in about 90 per cent of the cases. It would seem that about 70 per cent of the patients will have permanent good results, although it is still a little too early to be certain, because we started to employ this type of surgery only about two and a half years ago. In approximately 3 per cent of the cases the ability to hear may be decreased by the operation, and in about 1 per cent complete deafness may develop in the operated ear. The latter result, we feel, is caused mostly by hemorrhage into the labyrinth or by an infection.

It might be asked, how does the fenestration operation improve hearing? It has been known for many years that in conduction deafness the draining off of a portion of the perilymph, so that mobility of both perilymph and endolymph is increased, would produce immediate improvement in the ability to hear; this improvement is again lost when the perilymph refills the perilymphatic space. The hypothesis has been presented that the fenestration operation makes the tympanic membrane more responsive to vibrations by means of removal of the head of the malleus and leaves the tympanic membrane attached to a thin flap of membrane which is used to cover and maintain patent a new opening into the perilymph, so that a permanent condition is produced in which the endolymph is more mobile and is stimulated by the more vigorous vibrations of a more mobilized tympanic membrane. Therefore, in order to secure good results, the tympanic membrane must be intact and capable of increased response to sound waves. This theory is not entirely satisfactory, however, since I have seen several patients with badly torn eardrums and flaps in whom marked improvement in hearing nevertheless develops. It is possible that the eardrum does not have much to do with the good result obtained from the fenestration operation.

I feel that the sound waves might enter the round window, and that the excess acoustic trauma then normally escapes through the oval window, the whole chain of ossicles then being a protector for the cochlea, so that very loud noises might be screened out. After fenestration operations, the sound waves might escape through the new window. It seems that in such an instance the normal protector mechanism with the ossicular chain is gone, and therefore deterioration of hearing might be expected if the patient so treated has a prolonged exposure to loud noises. In practice, this conclusion does not seem to hold true; at least, I know of one patient who was exposed to continuous gunfire during the war, but he did not experience any deterioration of hearing. As a general rule, patients, after successful fenestration surgery, should not expose themselves to continuous acoustic trauma.

It might also be asked if this operation can be performed in all cases in which a presumptive diagnosis of clinic otosclerosis can be made. There appears to be an increased number of cases of clinical otosclerosis in which atrophy of the fibers of the cochlear nerve or cells of the organ of Corti occurs. It is not known whether this atrophy is one of disuse secondary to immobilization of the stapes or secondary nerve degeneration. When secondary nerve degeneration occurs, the probability of obtaining a good result from surgery is diminished. If the nerve degeneration affects only the higher tones above the range of speech, it is perfectly advisable to proceed with surgery, but if it is suspected that the nerve degeneration affects the range of speech, the chance of success of the operation in restoration of hearing is inversely proportional to the degree of degeneration present.

It has been found that the 30 decibel line is the critical level for conversational speech. At 5 decibels above this line, a person will have little difficulty in understanding speech, whereas at 5 decibels below this line, the person is severely handicapped. The two most important frequencies for the understanding of speech are 1,024 and 2,048 double vibrations per second.

Lempert has stated that the average improvement in hearing, measured in decibels, which is produced by a successful fenestration operation is about 20. The object of fenestration surgery is to bring the hearing above the 30 decibel line. Therefore, a patient who has a loss of hearing of 50 decibels or more must expect much less than the average probability of a good result from surgery.

What are the usual causes for failure? I shall only enumerate them: (1) faulty diagnosis, (2) osteoma (I have seen two patients with such lesions), (3) closure of window with regeneration of bone, in which event the surgeon must be very careful so that all bone chips are removed from the window, (4) infection with development of labyrinthitis, (5) late infection with fibrosis of the endolymphatic duct, (6) hemorrhage into the labyrinth after surgery, and (7) poor surgery.

If the patient who seeks aid is found to have clinical otosclerosis of an operable type, he is first informed as to the possibility of obtaining a good result for his particular condition. We tell him that surgery is optional and that it is accompanied by a risk which, however, is small. The patient must weigh this risk against the results obtained by use of a hearing aid, which instruments nowadays are efficient and give promise of even further improvement.

Conditions of the Nose and Throat

About fifteen or twenty years ago surgical treatment for a variety of nasal conditions was radical; almost everything that protruded was excised from the nose and the end result for the patient would be a so-called lead-pipe nose. Modern surgical treatment generally has been directed toward retention of the normal physiology of the nose. Penicillin did much to better the therapy of diseases of the nose and throat. The sulfonamide drugs, however, did not prove to be so effective as was hoped in the treatment of infections of the paranasal sinuses.

Williams and Popp[12] reported in 1940 on roentgen therapy for acute sinusitis. I feel it is worth while to mention their views again herein. Roentgen therapy reduces pain promptly, probably by rendering secretions more liquid. Occasionally, roentgen therapy shrinks the mucous membrane sufficiently so that when the next infection occurs there is either no pain at all or it is very slight.

In the treatment of chronic sinusitis much can be done with conservative surgical treatment with penicillin as an adjunct. Penicillin alone will not cure chronic disease of the sinuses. If penicillin is administered the condition of the nose often will improve, but as soon as the use of penicillin is stopped, the infection will recur.

In the treatment of chronic pansinusitis without bronchiectasis, surgery and penicillin are the agents of choice. The treatment of chronic pansinusitis with bronchiectasis is somewhat different: often by the clearing up or amelioration of the condition in the lungs first, remarkable improvement is seen in the nose, and occasionally no further treatment need be directed to the nose. Sometimes the infection extends into the bone, in which instance osteomyelitis arises. The so-called spreading type of osteomyelitis has been dreaded by otolaryngologists. This type of infection occasionally starts after an intranasal operation. I reported two such cases, in which the infection was situated in the maxilla.[5] Both patients recovered after a combined treatment with radical surgery and penicillin. These infections usually are caused by an anaerobic streptococcus, and in spite of everything that could be done—that is, before the advent of penicillin—the mortality rate was almost 100 per cent. Lillie[10] also has reported several such cases.

Nasal allergy still is one of the unsolved problems of rhinology. Nasal allergy includes seasonal hay fever and so-called vasomotor rhinitis, which is characterized by sneezing and watery discharge in the morning. Of the newer treatments, I should mention that involving histamine. The physiologic effects of histamine are known to be: (1) contraction of smooth muscle, (2) constriction of arterioles, (3) dilatation and increased permeability of the capillaries, with localized edema, and (4) increased secretion by the secretory glands. Because there is a similarity between the action of allergy and that of histamine, small doses of histamine are administered in an attempt to desensitize the patient. Histamine and nicotinic acid can be tried, but in my experience, especially in respect to nicotinic acid, the results have been rather disappointing.

Benadryl (beta-dimethylaminoethyl benzhydryl ether hydrochloride), which is an antihistaminic substance, has been tried much lately. In vasomotor rhinitis it helps only in about 20 per cent of the cases. Moreover, the side effects—drowsiness and nervousness—are most annoying.

A newer drug, pyribenzamine hydrochloride (N′-pyridyl-N′ benzyl-N-dimethyl-ethylene diamine hydrochloride), seems to affect vasomotor rhinitis more satisfactorily; 50 to 60 per cent of patients derive benefit from this drug. The side reactions are not so noticeable as are the side effects of benadryl. At least, this was the opinion of McBean,[11] who recently studied the subject.

Of the newer treatments, I might also mention that involving the use of streptomycin—the newest of the antibiotic agents. Since Klebsiella ozaenae, a bacterium which is sensitive to streptomycin, often is found in ozena, treatment of this disease with streptomycin has been tried. These experiments were started only recently by Dr. K. M. Simonton, and it is still too early to be able to say whether the patients have derived lasting benefit from it.

Finally, I shall mention the use and misuse of nasal vasoconstrictors. These points recently were stressed by Lake.[8] For a long time it has been known that overuse of vascoconstrictors eventually leads to difficulty in nasal function. Scarcely a day goes by during which some of us in the Section on Otolaryngology and Rhinology do not see one or two patients who are the victims of misuse of nose drops. We often call this condition "rhinitis medicamentosa." The usual story is as follows: "My doctor gave me nose drops for 'sinus trouble.' After a few weeks they did not give me relief any more and I got hold of some stronger ones. Now they don't help me much, either."

Every attempt should be made to alleviate the original condition which led to the use of vasoconstrictors. An explanation of the normal physiology of the nose frequently is helpful in relieving the patient's mind concerning certain misconceptions that he has entertained regarding his nose.

There are certain indications for the use of nose drops. First, strong vasoconstricting agents are necessary in preoperative preparation and anesthetization of the nose. Second, nose drops can be used for not more than two days, during the first stages of an acute cold, when certain patients experience complete blockage of the nares. Third, nose drops can be administered to the nursing infant who has a cold, so that he may be enabled to breathe well enough to take his feeding. Otherwise, the habit of the use of nose drops should be strongly discouraged.

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AMEBIC ABSCESS OF THE LIVER WITH BRONCHOHEPATIC FISTULA

Report of a Case and Discussion of Emetine Cardiotoxicity

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AMEBIASIS with all its protean manifestations presents a problem of great importance. This disease has never been considered a strictly tropical problem for it has been discovered wherever careful surveys have been conducted. The over-all infection rate for the United States has been estimated to be about 10 per cent.[1] The incidence in tropical and subtropical regions and in areas of poor hygienic standards is much higher. Klatskin[10] has estimated the incidence of amebiasis among American troops stationed in India during the recent war to be between 20 and 40 per cent. This is comparable to the incidence of 23 per cent infection among troops in Calcutta and 18.3 per cent infection among troops in Myitkyina, Burma, as quoted by Karl and Sloan.[9] The return of troops from those and other endemic areas increases the significance of this disease to the physician and the public. Several authors[1,9,10] have recently stressed the danger of producing a definite public health problem incident to the return to this country of a large number of undiagnosed and unsuspected cases of amebiasis. The chronicity of the disease, especially in asymptomatic "cyst passers," can be expected to manifest itself in exacerbations and complications in the patient and by the spread of the disease to previously uninfected persons. These problems can be expected to arise in the Upper Midwest as frequently as might be expected in other portions of the country. A constant awareness of the possibility of this disease is the most important factor which will lead to a proper diagnosis and successful treatment. It is imperative that the physician be acquainted not only with the intestinal signs of amebiasis but also with the numerous other clinical manifestations and complications of the disease. We are presenting a case of amebic abscess of the liver with pleuropulmonary complications.

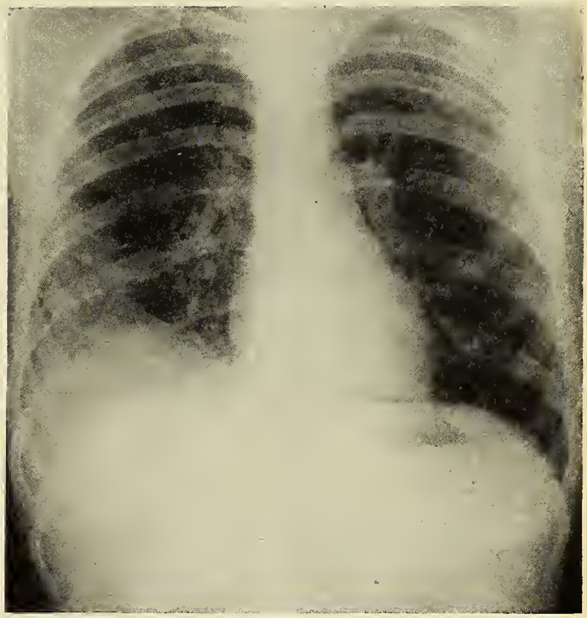

Fig. 1. Roentgenogram of chest, February 13, 1947. Elevation of the right diaphragm and evidence of pleural effusion.

Case Report

R.B., a twenty-year-old World War II veteran, was admitted to the Minneapolis Veterans Administration Hospital on February 11, 1947. He dated the onset of his present illness to December, 1946, when he noted the onset of fever, cough, shortness of breath, soreness in the right shoulder, and pain in the right lower chest. He attributed his symptoms to a recurrence of malaria and took quinine sulfate for several days. The symptoms persisted and he was admitted to a local hospital on December 30, 1946, with an admitting diagnosis of recurrent malaria and right lower lobe pneumonia. He was treated with quinine sulfate, sulfadiazine, penicillin, and streptomycin; however, his symptoms persisted. On February 2, 1947, while still in the hospital, he suddenly coughed up a large amount of a "chocolate pudding-like" material and subsequently coughed up bitter, bile-stained material. The diagnosis of amebiasis with hepatic abscess and bronchohepatic fistula was made at that time, and he was started on emetine therapy. He received seven intramuscular injections of emetine prior to transfer to the Veterans Administration Hospital. During the course of this illness he lost about 30 pounds in weight.

The past history was significant in that he had first developed bloody diarrhea about a year prior to admission while stationed on Luzon in the Philippine Islands. At that time he received nonspecific therapy and the diarrhea subsided in about four days. Two months later while en route to the United States he

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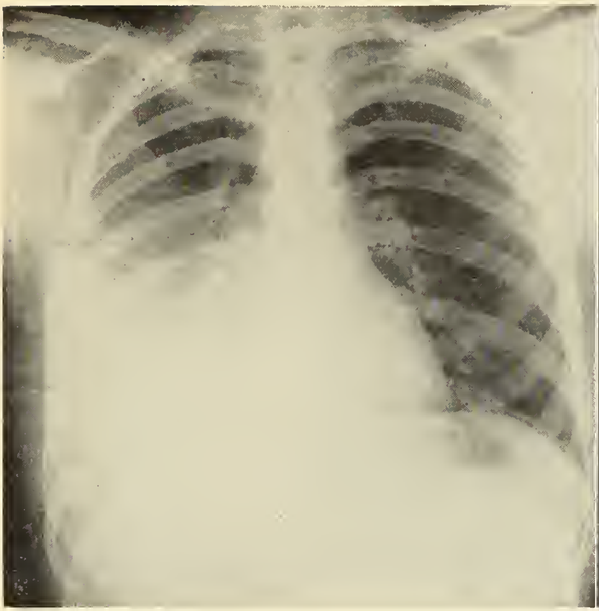

Fig. 2. Roentgenogram of chest, posteroanterior view, March 10, 1947. Marked increase in the parenchymal lesion on the right.

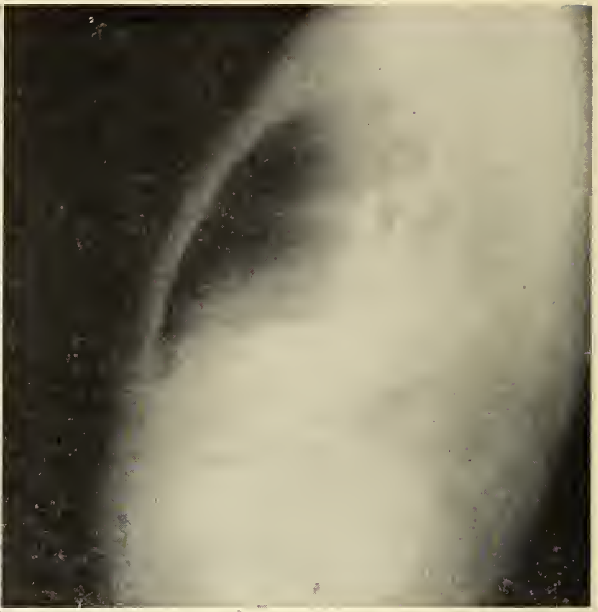

Fig. 3. Roentgenogram of chest, lateral view, March 10, 1947. Doming of the anterior portion of the right hemi-diaphragm.

developed a second episode of bloody diarrhea. He also had chills and fever, and examination of the blood smear revealed the presence of malaria parasites. He was treated only with quinine and all his symptoms subsided. Following this he had recurrent episodes of bloody diarrhea every four to eight weeks. At no time during this entire year was his stool ever examined for ova or parasites; however, on numerous occasions he received nonspecific therapy for the diarrhea.

Physical examination on admission revealed a well-developed, poorly nourished young white man who appeared chronically ill. His temperature was 99° F., his pulse 120 per minute, and his respirations 20 per minute. There was no icterus of the skin or sclerae. Examination of the chest revealed limited expansion on the right and there was dulness to percussion over the lower third of the right lung field posteriorly and laterally. The right diaphragm was immobile. The breath sounds were diminished over the area of dulness. Many coarse râles were present in the lower right lung field. The heart was not enlarged and the heart tones were normal. The blood pressure was 120 mm. mercury systolic and 68 mm. mercury diastolic. There was marked tenderness to pressure in the right upper abdominal quadrant, and the liver mass was thought to extend just below the costal margin. There was compression tenderness elicited over the liver area. The remainder of the physical examination was otherwise essentially negative.

Laboratory Data.—Blood study on admission revealed a hemoglobin of 14.2 grams per cent, a red blood count of 4,870,000, and a leukocyte count of 13,700, with a differential of 56 per cent neutrophils, 30 per cent lymphocytes, 3 per cent monocytes, and 11 per cent eosinophils. The erythrocyte sedimentation rate was 45 mm. per hour. The serological test for syphilis was negative. Blood chemistry studies revealed a blood sugar of 84 mg. per cent, a blood urea nitrogen of 14 mg. per cent, total plasma proteins of 8.3 grams per cent, with 5.5 grams per cent albumin and 2.8 grams per cent globulin. The total serum bilirubin was 0.4 mg. per cent.

Urinalysis on admission revealed a slightly acid reaction, a specific gravity of 1.025, negative tests for albumin and sugar, and 2 to 3 white blood cells per high power field. Examination of the blood smear failed to reveal malaria parasites. Numerous examinations of the sputa were all negative for bile, and no endameba histolytica were found. No ova or parasites were found in the feces on repeated studies. The bromsulfalein test revealed 10 per cent retention at the end of forty-five minutes. The cephalin cholesterol flocculation test was negative after twenty-four and forty-eight hours. Liver function studies repeated on April 2, 1947, the fiftieth hospital day, revealed no retention of bromsulfalein at the end of forty-five minutes, a negative cephalin cholesterol flocculation test, a total serum bilirubin of 0.3 mg. per cent, and an alkaline phosphatase activity of the serum of 8 King-Armstrong units.

Roentgenologic examination of the chest shortly after admission (Fig. 1) showed an elevation of the right diaphragm and evidence of pleural effusion on the right. On fluoroscopic examination the right diaphragm was noted to be almost immobile, although slight paradoxical movement could be seen on deep inspiration.

Hospital Course.—On the fourth hospital day the patient was started on intramuscular injections of emetine in doses of 1 grain daily. He was also started on diodoquin, 10 grains three times a day. The patient

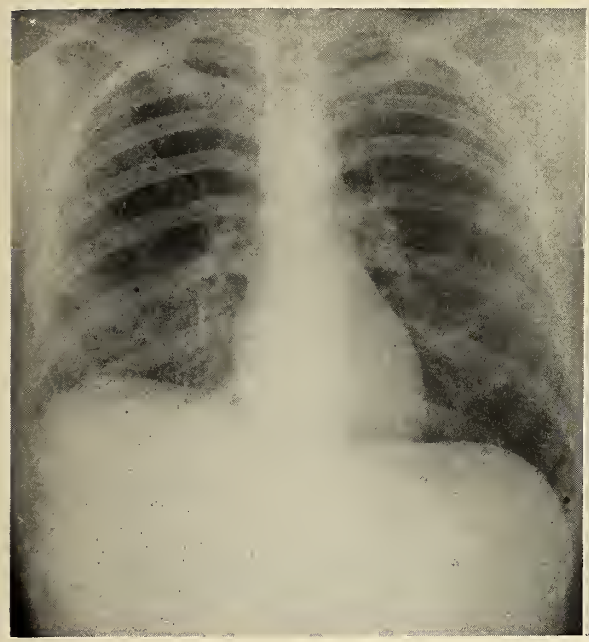

Fig. 4. Roentgenogram of chest, April 10, 1947. Almost complete resolution of the process on the right.

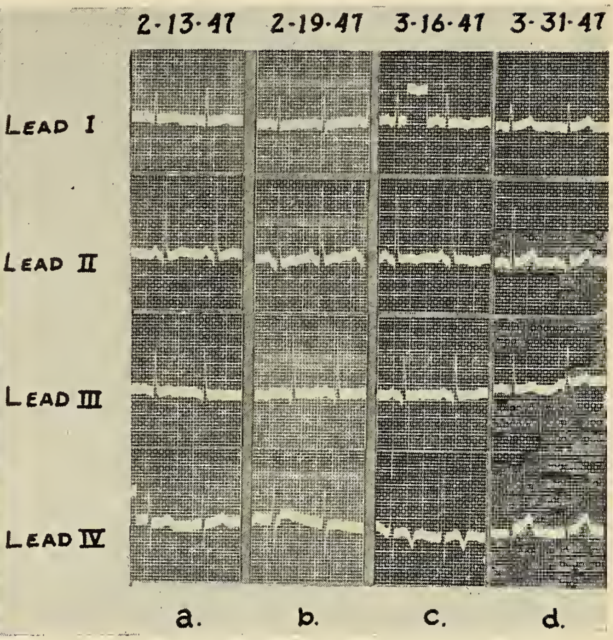

Fig. 5. (a) Pretreatment electrocardiogram interpreted as within normal limits.

(b) T wave changes noted after 5 grains emetine hydrochloride intramuscularly over five-day period.

(c) Marked T wave changes after third course of only 3½ grains emetine hydrochloride. Course preceded by short rest period, and thus the electrocardiogram shows cumulative effect of emetine.

(d) After 15-day rest period the electrocardiogram shows complete return to normal.

was kept on strict bed rest, the blood pressure was checked frequently, and electrocardiagrams were taken every other day. On the third day of emetine therapy a marked decrease in the amplitude of the T waves was noted in all leads and on the fifth day there was a flat T_1 and diphasic T_2, T_3, and Tcf_4 (Fig. 5b): In view of the progressive electrocardiographic changes from the normal pretreatment tracing (Fig. 5a) emetine was discontinued after a total of 6 grains had been given. The diodoquin was continued for a total of twelve days. On this regime he improved subjectively and by the thirteenth hospital day the erythrocyte sedimentation rate was down to 5 mm. per hour. However, the leukocyte count remained elevated between 13,000 and 14,000. On the eleventh and fifteenth hospital days, thoracenteses were attempted but no fluid was obtained at either time. In order to prevent secondary infection following attempted thoracentesis, penicillin was given prophylactically from the twelfth through the seventeenth hospital days. Except for occasional elevations to 99° F. the patient's temperature remained essentially normal during the early phase of treatment.

On the twentieth hospital day the patient again became rather acutely ill; his temperature rose to 100° F., and the leukocyte count rose to 16,759, with 71 per cent neutrophils. The emetine treatment was renewed in doses of one grain daily given intramuscularly and continued for five days. His temperature remained between 99° and 100° F., for seven days, the leukocyte count rose to 19,600, and the erythrocyte sedimentation rose to 86 mm. per hour. Penicillin was again started prophylactically on the twenty-first hospital day. Posteroanterior and lateral chest x-rays, taken on March 10, 1947 (Figs. 2 and 3), the twenty-seventh hospital day, revealed a doming of the anterior portion of the right diaphragm, which was interpreted to be the formation of a new liver abscess or reaccumulation of fluid in the previous abscess cavity. In spite of the fact that the patient had not had a sufficient rest period, a third course of emetine was started preparatory to attempted aspiration of the abscess. The emetine was given in doses of ½ grain intramuscularly every eight hours for four doses preoperatively. Following this the patient was taken to the operating room and aspiration was attempted from three approaches: lateral, anterolateral, and anterior. All attempts failed to yield pus and the procedure was discontinued. Emetine was continued postoperatively in doses of ½ grain intramuscularly daily. The electrocardiogram showed progressive changes with tendency to inversion of all T waves (Fig. 5c), and thus emetine was discontinued after a total preoperative and postoperative dose of 3½ grains had been given. In spite of the failure to aspirate pus from the liver, the patient improved rather remarkably. His temperature returned to normal, the leukocyte count and the erythrocyte sedimentation rate gradually returned to within normal range, and subsequent roentgenologic studies showed disappearance of the doming and clearance of the pulmonary lesion. On the forty-ninth hospital day the leukocyte count was 9,600 with 56 per cent neutrophils, and the erythrocyte sedimentation rate was 2 mm. per hour. The electrocardiogram at that time was within normal limits with normal positive amplitude of all T waves (Fig. 5d). In view of the severity of the original infection, it was deemed advisable to give the patient another small course of emetine. There had been a rest period of sixteen days since the last emetine had been administered. The final course consisted of ½ grain daily for eight days. At no time during this course did the electrocardiogram become abnormal; however, on the seventh day of therapy there was a very slight decrease in the upright amplitude of the T waves.

Subsequent roentgenologic (Fig. 4) and fluoroscopic studies showed a remarkable clearing of the pulmonary lesion and almost normal movement of the right diaphragm. The liver was still palpable 3 cm. below the costal margin in the mid-clavicular line but it was no longer tender. On the sixty-fifth hospital day the patient was up and about the ward. His weight was 148 pounds as compared with an admission weight of 131 pounds. He was discharged on the seventy-second hospital day.

Discussion

Amebic hepatitis and amebic abscess of the liver are the most important extra-intestinal manifestations of this disease. In Klatskin's series[11] of 748 cases of amebiasis there were sixty-nine cases (9.2 per cent) with liver involvement, and in the 360 cases reported by Karl and Sloan[9] there were thirty cases (8.3 per cent) with liver involvement.

The symptoms and signs of hepatic amebiasis have been stressed in a number of recent articles.[1,9,10,11,13,14,15,18,19] Pain over the liver area is the most common symptom and is almost universally present. The pain is usually anterior and subcostal in location but may also be present over the lower chest posteriorly. Not infrequently the pain may occur over the entire lower right chest and may be aggravated by coughing. This may direct one's attention to the chest and suggest the erroneous diagnosis of pleurisy or early pneumonia. Fever is probably the next most common symptom and is an almost constant feature of abscess, but may be absent in presuppurative lesions of the liver. In the event of abscess formation chills are not infrequent. Nausea and vomiting are said to occur in about one-third of the cases.[10] Anorexia, cough, and jaundice are other less common symptoms. Sodeman and Lewis[18] report the presence of jaundice in five cases (15.1 per cent) of a series of thirty-three patients with amebic hepatitis. Diarrhea may or may not be present during the development of hepatic involvement. In the thirty-three cases reported by Sodeman and Lewis[18] only nine patients had diarrhea at the onset of the hepatitis, although another seven gave a history of previous episodes of diarrhea.

The most constant and significant physical findings include liver tenderness and hepatomegaly. Klatskin[10,11] places considerable emphasis on the importance of compression tenderness over the liver area. Corroborative laboratory evidence will usually include a moderate leukocytosis and an elevated erythrocyte sedimentation rate. The finding of cysts or trophozoites of endameba histolytica in the feces is not essential to the diagnosis of hepatic amebiasis. In the sixty-nine cases of amebic hepatitis reported by Klatskin,[10] endameba histolytica was found in the feces in 80 per cent of the cases. In the series reported by Sodeman and Lewis[18] the organisms were found in the feces in only 54.5 per cent of thirty-three cases. Roentgen-ray studies may give further aid to the diagnosis by the demonstration of a mass bulging under the diaphragm. Elevation of the right diaphragm and immobilization are other frequent findings.

The absolute diagnosis of hepatic amebiasis depends upon the aspiration of "anchovy-sauce" pus and the demonstration of endameba histolytica in the material. However, to wait for this evidence in all cases would be unjustified. With the aforementioned signs, symptoms, and laboratory findings, one can make a presumptive diagnosis of hepatic amebiasis, and a trial of emetine therapy is indicated. A satisfactory response to this treatment adds further weight to the correctness of the diagnosis.

Pleuropulmonary involvement constitutes one of the most important complications of amebic abscess of the liver. This manifestation of the disease has been considered in some detail by Ochsner and DeBakey.[13,14,15] A few of the more pertinent facts mentioned by these authors will be discussed here. Occasionally pulmonary amebic abscess may occur without evidence of liver disease, or may occur independent of the liver infection. However, pleuropulmonary involvement is most commonly the result of direct extension of the disease from the liver through the diaphragm.

Of the 2,490 cases of the amebic hepatic abscess collected by Ochsner and DeBakey,[13] 198 (7.5 per cent) had pleural complications and 209 (8.3 per cent) had pulmonary complications. Thus pleuropulmonary complications occurred in

15.8 per cent of the cases. In their own series of 181 cases of amebic hepatitis and hepatic abscess there were twenty-six cases (14.4 per cent) of pleuropulmonary involvement.[14,15] In the series of fifty-eight cases of hepatic amebic abscess reported by Sodeman and Lewis[19] there were twelve cases (20 per cent) in which the presenting signs and symptoms were those of pleural pain, pleural effusion, or pneumonitis. Of the twenty-six cases of pleuropulmonary involvement reported by Ochsner and DeBakey[14,15] there were nine cases (34.6 per cent) of empyema, nine cases (34.6 per cent) of pulmonary abscess, and eight cases (30.4 per cent) of bronchohepatic fistula.

The symptoms and signs of pleuropulmonary complications depend to a large extent upon the type of involvement. Chest pain and cough are almost constant symptoms. The former may frequently be referred to the shoulder area as a result of diaphragmatic irritation. The expectoration of "anchovy-sauce" pus is considered to be pathognomonic of the disease. The demonstration of endameba histolytica in the sputum of course establishes the diagnosis. Roentgenologic examination of the chest may frequently reveal in the lower lung field a triangular shadow with the base directed toward the liver and the apex directed toward the hilum of the lung. However, roentgen-rays may only demonstrate evidence of a pleural effusion or empyema.

The prognosis depends upon the type of complications and the type of therapy used. In the collected series of Ochsner and DeBakey[13] there was a mortality of 56.1 per cent among cases of pleuropulmonary involvement not receiving emetine. In cases receiving emetine the mortality was 8.2 per cent. Open drainage increased the mortality even when combined with emetine. The total mortality in the collected series was 41.1 per cent. In the twenty-six personal cases reported by Ochsner and DeBakey[14,15] the total mortality was 30.8 per cent. The development of an empyema has the worst prognosis while the formation of a bronchohepatic fistula offers the best prognosis. Of the twenty-six cases of Ochsner and DeBakey[14,15] there were six deaths (66.6 per cent) among the nine cases of empyema, two deaths (22.2 per cent) among the nine cases of pulmonary abscess, and no deaths among the eight cases of bronchohepatic fistula.

Emetine Cardiotoxicity

The therapeutic problem which arose when the patient manifested electrocardiographic evidence of emetine cardiotoxicity was of extreme concern to us. Though the cardiotoxic effects of emetine have been known[12] since 1916, considerable difference of opinion still exists as to its clinical significance. The experimental basis for emetine cardiotoxicity has been universally accepted.[2,4,12,16] In 1916 Levy and Rowntree[12] demonstrated that the intravenous injection into dogs of 4 to 18 mg. of emetine per kilogram of weight produced death by ventricular fibrillation. The authors stated that the principal pathological lesion was a hemorrhagic gastroenteritis, but no discussion is given of the myocardial pathology. In 1922 Chopra and Ghosh[4] reported cloudy swelling, atrophy, and myocardial necrosis in rabbits that had been poisoned by doses of emetine. Rinehart and Anderson[16] reported that in rabbits and cats a single dose by mouth of 15 to 20 mg. per kilogram produced death in more than 50 per cent of the animals in two to eight days. Lethal or sublethal doses of the drug caused severe injury to the heart muscle. Those animals that died in less than forty-eight hours showed interstitial edema of the myocardium. In animals surviving for more than three days there was found a necrosis of some fibers and a degenerative swelling of the remainder. Focal proliferation of plasma cells, polymorphonuclear cells, and eosinophils was present. A more chronic intoxication with divided lethal doses caused small cellular scars in the myocardium, the scars being centered about necrotic fibers.[16] As will be suggested later this is of considerable clinical significance in evaluating the cumulative effect of emetine upon the myocardium. More recently striking electrocardiographic changes have been noted in dogs and cats following the intravenous administration of emetine in a dose of 37 mg. per kilogram.[2] The earliest alteration consisted of widening of the initial QRS complex. This was noted to occur as early as 20 to 30 seconds after the injection and was not accompanied by prolongation of the PR interval, T wave changes, or unusual change in the heart rate. A second injection caused further intraventricular block and auricular extrasystoles. A third injection usually caused the heart to stop in diastole. Paroxysmal auricular tachycardia was frequently noted. Ventricular tachycardia was less common and often changed to ventricular fibrillation. None of the dogs showed an abnormal increase in the PR interval; however, two cats were noted to have complete heart block. The electrocardiographic alterations usually disappeared within forty-five minutes if the dose did not exceed 37 mg. per kilogram. The striking effect of the cumulative action of emetine is noted by the response to a second or third injection of the drug. Thus it has been shown that emetine is capable of producing marked cardiotoxicity in experimental animals, although it is recognized that the doses employed are far in excess of those used therapeutically. It remained for clinical investigation to establish that emetine cardiotoxicity may also occur with the usual therapeutic doses. The difference of opinion which challenges this concept is felt to be due to a different clinical approach to the problem.

In 1935 Brown,[3] in summarizing his experience with 544 cases of amebiasis treated at the Mayo Clinic with emetine, reported no evidence of cardiovascular disease. It is noted, however, that no electrocardiograms were reported. In the same year Sayid[17] reported two cases of auricular fibrillation following the subcutaneous administration of emetine. One might challenge the arrhythmia in his first case since it occurred in a patient with mitral heart disease. The second case is thought to be significant since the patient had no evidence of heart disease prior to emetine therapy. In 1943 Heilig and Viveswar[8] reported a series of forty-five unselected cases of amebiasis in whom emetine was given by both the intramuscular and intravenous routes. It was noted that these authors were dealing with chronically ill, malnourished patients, a large majority of whom had abnormal electrocardiograms prior to institution of therapy. In one of fourteen cases treated intramuscularly, electrocardiographic changes consisted of lowered QRS voltage and flattening of the T_2 after therapy. In six of sixteen cases treated intravenously, prolongation of the PR interval, diminished QRS voltage, and flattening of the T waves were noted. Fifteen cases treated with intravenous emetine were subjected to an exercise tolerance test, and lowered voltage of the R waves was noted in six instances and lowered T waves in nine instances. In all of the above-mentioned series, the dose consisted of 1 grain daily for twelve days. The authors' conclusion that a moderate cardiac lesion is no contraindication to emetine would seem, in view of the above-noted electrocardiographic changes, to be open to some criticism.

In 1944 Hardgrove and Smith,[7] in a series of seventy-two cases treated with ½ grain of emetine twice a day for ten days, noted depression of T waves varying from lowering to frank inversion in thirty-three cases (45.8 per cent). In nine cases it was noted that the PR interval increased although still remaining within normal limits. In four cases there were noted auricular or ventricular extrasystoles. In 1945 Cottrell and Hayward[5] reported a series of thirty-two cases treated with 1 grain of emetine intramuscularly for ten to twelve days. Lowering of the QRS was noted in seven cases and diminution of the T waves in one or more leads in twenty-five cases. In twelve cases the PR interval increased from .02 to .04 seconds but still remained within normal limits. The blood pressure was observed in twenty-one cases; no change occurring in thirteen, a transient fall from 15 to 20 mm. mercury occurring in six, and a persistent fall in two cases. Recently Dack and Moloshok[6] reported nine cases of amebic dysentery in whom toxic cardiac manifestations developed after treatment with emetine. Dyspnea, tachycardia, or palpitation were observed in seven cases. Electrocardiographic abnormalities consisting of T wave changes were reported in all nine cases. The authors stress the fact that electrocardiographic abnormalities may first appear one or two weeks after cessation of treatment.

From the bulk of evidence it would seem safe to conclude that emetine is capable of producing clinically significant toxic effects on the heart. The electrocardiographic changes noted in our case were interpreted as evidence of early emetine cardiotoxicity and indications for at least temporary cessation of emetine therapy. The length of the rest periods between courses of emetine was shorter than we would have liked to observe; however, our desires in this regard were modified by the severity of the infection and the dire need for specific therapy.

Summary

1. A case of amebic abscess of the liver with bronchohepatic fistula is reported. The diagnostic criteria have been discussed.

2. Amebiasis and its complications present a

(Continued on Page 1177)

CLINICAL USE OF FOLIC ACID

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MUCH has been written on the clinical use of folic acid (pteroyl glutamic acid). The results of the various investigations have been quite similar, and consequently there is fair agreement as to indications and contraindications for its use. The purpose of this paper is to review briefly some of the literature and to add the results of the use of folic acid by the Department of Medicine at the University of Minnesota Hospitals during the past year.

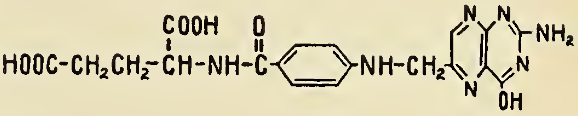
Studies on Nutrition of the Monkey

Berry and Spies[5] and Spies[43] have published the most complete reviews of the literature. Time permits only a brief review here. Probably it is most logical to first review the studies done on the nutrition of the Macacus Rhesus monkey. Wills and Bilimoria[50] in 1932 showed that monkeys fed a diet similar to that eaten by pregnant women in Bombay, India, developed anemia, leukopenia, and had a megaloblastic bone marrow. Yeast extract corrected the condition. In 1935 Day, Langston, and Shukers[15] performed a similar experiment, noted that the animals developed in addition gingivitis, diarrhea, and expired in twenty-six to ninety-three days. They also noted[16] that 10 grams of brewer's yeast or 2 grams of a liver stomach preparation daily promoted a normal state of nutrition. This unknown substance was designated vitamin "M,"[17] the "M" for monkey. Known vitamins were noted to be ineffective in the condition and liver extract was shown to be effective.[29] In subsequent experiments[19,38,39,46,51] beneficial effects in the deficiency syndrome were obtained with yeast residue, crude liver extract, a norit eluate fraction of liver, and a highly purified L. caseii factor. Finally, crystalline folic acid was shown to correct the condition.[18]

Work on L. Caseii Factor—"Folic Acid"

In 1941 Stokstad[44] isolated a factor from solubilized liver which was necessary for the growth of Lactobacillus caseii. At about the same time, Mitchell, Snell, and Peterson[31] reported isolation of a growth factor for Streptococcus lactis R (Streptococcus faecalis) from spinach. This they termed folic acid because of the source. A number of investigations have followed. Very briefly these have demonstrated that these factors were probably related and that hydrolysis of crude compounds produced substances equal in activity for both organisms. One of the biggest problems in studying folic acid is that the only method of quantitation is by bio-assay with either L. caseii or Streptococcus faecalis. At best it is not a very satisfactory method.

The various investigations have revealed there are at least four different compounds from various sources which have "folic acid" activity. The Lactobacillus caseii factor from liver has been synthesized[1] and its formula is:[2]



The folic acid factor from yeast has the same ring structure but differs in the number of molecules of glutamic acid, and is pteroylhexaglutamylglutamic acid.[35] The fermentation L. caseii factor has been described by Hutchings et al as pteroyldiglutamylglutamic acid.[26]

Studies in Chick Nutrition.—Hogan and Parott[25] in 1939 following studies on the nutrition of the chick, reported that a water soluble extract of liver was necessary to maintain growth and a satisfactory level of hemoglobin. He designated this substance as vitamin Bc, the "c" for chick, and showed that none of the known vitamins would replace it. In 1943 Pfiffner et al[36] reported they had isolated a crystalline substance from liver which was active for the chick and very active for L. caseii. This they felt was the same as the previously described "Eluate factor" and "folic acid." In subsequent reports[8,9,37] this same group of investigators showed that by enzymatic digestion of the yeast extract the substance was equally active for L. caseii and Streptococcus faecalis and also was as equally active as the liver factor. Much confusion has arisen

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in connection with the studies of chick nutrition also but it appears that Briggs and Lillie[10] answered most of the problems by feeding chicks what appeared to be a diet deficient in folic acid and adding the synthetic substance. This promoted normal growth in all respects whereas the chicks not fed the synthetic product began to develop signs of the deficiency syndrome.

Folic Acid Deficiency in the Rat.—There are two reviews[5,12] of this work which do not interest us greatly here except that these studies were responsible for the original use of folic acid at the University of Minnesota. Two papers[27,45] appeared which reported that rats fed on a purified diet plus sulfaguanidine or sulfasuxidine developed agranulocytopenia and aplasia of the bone marrow. This was corrected in three to ten days by liver fractions known to contain folic acid, even when the control conditions were continued. A similar response[13] was obtained with crystalline L. caseii factor. In a subsequent report[28] L. caseii factor was repeatedly able to correct the granulocytopenia of rats on the deficient diet.

Possible Folic Acid Deficiency in other Animals.—A number of studies on deficiency states in other animals have been reported. Most of these have been reviewed by Spies.[5] It appears at this time that they do not add anything to our knowledge of folic acid and its relationship to human nutrition.

Studies on Folic Acid in Man

It is impossible to know where such a review should begin; perhaps with the use of liver extract in pernicious anemia, perhaps with the use of yeast in macrocytic anemia of pregnancy. In any event, both liver and yeast have been used successfully and extensively in the treatment of various anemias and sprue. Whether their beneficial effects have been due to their folic acid content is not definitely apparent at this time. Again, the subject is reviewed by Spies.[51]

One of the first clinical studies was reported in 1944 when a Bc concentrate was given to ten patients with anemia which would not respond to the usual therapy. A dose of 1500 gamma per day failed to give a response.[40]

In 1945 Watson et al[49] reported giving folic acid concentrate orally to eight patients with refractory anemia. No response was noted. In six cases with leukopenia resulting from intensive roentgen ray therapy for carcinoma of the cervix, definite elevations of the leukocyte count were noted. One patient with polycythemia vera, receiving total body radiation, exhibited a rise in the leukocyte count. No effect was noted in one patient with Hodgkins disease who was receiving radiation therapy. Also in 1945 Berry, Spies, and Doan[6] obtained transitory rises in the leukocyte counts in patients with leukopenia associated with a general vitamin B complex deficiency. A more recent report[34] stated that agranulocytosis appeared in a patient receiving propylthiouracil while 30 mg. of folic acid was being given daily.

Vilter, Spies, and Koch[47] reported a study on fourteen cases of macrocytic anemia treated with synthetic folic acid. Five of these were Addisonian pernicious anemia, six were classified as nutritional anemias, and three were of indeterminate type. Thirteen of the patients responded with a satisfactory reticulocytosis, rise in hemoglobin, and erythrocyte count. The response was considered to be equal to that expected from liver extract and was independent of the route of administration.

Moore, Bierbaum, Welch, and Wright[32] reported a small group of cases treated with synthetic folic acid. Included were two patients with Addisonian pernicious anemia, one patient with nontropical sprue, and one patient with pernicious anemia of pregnancy. All obtained excellent hematological remissions.

Spies[41] more recently summarized treatment of forty-five patients with various anemias. He obtained hematological responses in five cases of nutritional macrocytic anemia, five cases of Addisonian pernicious anemia, eight cases of sprue, three indeterminate macrocytic anemias, three pernicious anemias of pregnancy, one macrocytic anemia and alcoholism, one macrocytic anemia and carcinoma of the stomach. Ten patients did not respond at all. These included three with aplastic anemia, three with leukemia, three with hypochromic anemia, and one with an indeterminate macrocytic anemia.

Arnall and Wright[3] noted that pernicious anemia responded to folic acid.

Other articles of interest have appeared. Zuilzer and Ogden[53] noted that nine of twelve infants with macrocytic anemia responded to folic acid.

Berman et al[4] reported a series of eleven cases in which response was obtained in each instance where the bone marrow was megaloblastic. Doan[20] found folic acid failed in macrocytic anemia of cirrhosis. He also states that minor neurological signs and symptoms in patients with pernicious anemia in relapse have responded as promptly and completely following L. caseii factor supplement as with potent liver extract. Goldsmith[21] reported that familial hemolytic anemia did not respond to folic acid therapy. Moore et al[33] found that 100 mg. of folic acid given rectally to a patient with Addisonian pernicious anemia gave a submaximal response. There are four writers who disagree with Doan's view so far as the effect of folic acid on subacute combined degeneration is concerned. Spies[48] reported follow-up studies on a series of twenty-six patients. After five to eight months of treatment, four patients developed paresthesias and unsteady gait. Fifty to 500 mg. of folic acid orally per day for ten to fourteen days did not benefit the patients but five cubic centimeters of liver extract parenterally gave improvement in ten days. Hall[22] in a study of fourteen cases of pernicious anemia noted that the spinal cord lesions progressed. Meyer[30] noted progression of neurological lesions in three of eleven patients treated. Heinle and Welch[24] considered the possibility that folic acid caused a more rapid development of cord lesions in one patient.

Folic acid has also been used in the treatment of sprue, perhaps witth more success than in any other disease. Darby and Jones[14] treated successfully two patients suffering from tropical sprue with synthetic folic acid. More complete studies followed, but Spies et al[42] reported treatment of nine tropical sprue patients with excellent hematological responses, decrease in the volume and the number of stools, and improvement in the patient's sense of well-being.

*Results of Our Studies with the Use of Folic Acid.**—Our studies with folic acid (pteroylglutamic acid) have included administration to patients with a variety of conditions. Our results, in general, agree fairly well with what has been previously reported.

We have treated seven patients with pernicious anemia in relapse, six at this hospital and one at Ancker Hospital.

Case Reports

Case 1.—E. M., a woman aged sixty-three, was given folic acid 200 mg. intravenously over a period of sixteen days. The hemoglobin was 10 grams and the erythrocyte count was 2.4 million at the beginning of treatment. On the twenty-seventh day the hemoglobin was 15.7 grams and the erythrocyte count was 4.9 million.

Case 2.—J. B., a man aged sixty-six, was given 140 mg. of folic acid in ten days (60 mg. intravenously, 60 mg. intramuscularly, and 20 mg. orally), and on the tenth day, the hemoglobin had risen from 6.4 grams to 8.1 grams. Maximum reticulocyte response was 15.5 per cent on the sixth day. Liver extract parenterally failed to give a secondary reticulocytosis. Bone marrow study on the seventh day revealed an almost completely normoblastic marrow whereas before therapy it had been megaloblastic.

Case 3.—M. B., a woman aged forty-one, was given 15 mg. folic acid orally for twenty-four days and 15 mg. intramuscularly for the first three days. The hemoglobin rose from 3.9 grams to 10.6 grams, and the erythrocyte count from 850,000 to 3 million. Maximum reticulocytosis appeared on the sixth day when the count reached 35 per cent. Folic acid therapy was continued in this case from September 10, 1946, to November 15, 1946, the dosage being 15 mg. orally daily and 30 mg. intramuscularly every week. It is, however, not certain just how much of the medication the patient received. On November 15, 1946, the hemoglobin was 15.6 grams and the erythrocyte count was 4.8 million. The cell indices were normal, whereas before therapy there had been a marked macrocytosis.

Case 4.—E. J., a woman aged sixty-seven, was given folic acid 15 mg. intramuscularly and 15 mg. orally daily for eighteen days. The hemoglobin rose from 5.4 to 8.1 grams, and the erythrocyte count rose from 1.9 to 3.4 million. The maximum reticulocyte count appeared on the tenth day, when it was 10 per cent.

Case 5.—C. D., a man aged fifty-one, received folic acid 15 mg. intramuscularly daily for ten days, and 10 mg. orally daily for eighteen more days. The hemoglobin rose from 9.6 to 15.2 grams and the erythrocyte count rose from 2.5 million to 4.6 million in this interval. The reticulocyte count was maximal at the seventh day, when 11.3 per cent was recorded.

Case 6.—M. J., a woman aged seventy-three, was given 20 mg. of folic acid intravenously for ten days and 20 mg. orally for ten more days. The hemoglobin rose from 7.3 to 10.5 grams and the erythrocyte count from 1.4 million to 2.5 million. The maximum reticulocyte count was 16.2 per cent on the seventh day of therapy.

Case 7.—This patient, a woman aged eighty-five, was given 15 mg. of folic acid intramuscularly for ten days and 5 mg. orally thereafter. On the eighth day, the reticulocyte count was 25 per cent. The hemoglobin rose from 3.8 grams to 7.8 grams at the end of 20 days of therapy.

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*Synthetic folic acid, Lederele's "Folvite" was used in this study and was supplied by Dr. Stanton M. Hardy of Lederle Laboratories, Pearl River, New York.

The hematological responses in these patients compares quite favorably with the responses following liver therapy. In Case 3, where the intake of extrinsic factor was very poor, folic acid apparently was capable of maintaining normal blood levels for the period of time the patient was treated.

In June, 1946, we felt it would be very desirable to place a group of patients with treated pernicious anemia on folic acid in order to determine, if possible, whether the neurologic lesions of subacute combined degeneration would appear while folic acid was being given. We also wished to study the effect of folic acid on the cord lesions present at the time therapy was begun. We selected twenty-two patients, nineteen of whom we were able to follow for the period of study. Eleven of these patients had no neurological signs at the beginning of treatment, and their hemoglobin levels were well maintained by parenteral liver extract. Two of these eleven patients received 30 mg. of folic acid intramuscularly every two weeks. Two more received 30 mg. intramuscularly every two weeks for two months and were then given 5 and 10 mg. orally daily, respectively, for another four months. The remaining seven patients of this group of eleven were given 5 mg. folic acid orally for five to six months. Hemoglobin values and erythrocyte counts on these patients remained at relatively normal levels and the neurological pictures were unchanged.

There were nine patients of the group of twenty-two who had variable neurological symptoms and signs at the beginning of the study. Seven in this latter group were old cases which were stable on liver. Three of these had moderate neurological changes which did not progress during five months of treatment with folic acid. A fourth patient left the clinic before the study could be completed. A fifth patient had moderate neurological findings which did not progress. Two patients had severe cord changes when the study was begun. In one of these there was no apparent progression of the lesions during five months of study. The other demonstrated no changes at the end of five months and was again given a moderately refined liver extract. One month later, however, she had definite evidence of progression of the neurological lesions. She has shown no improvement after six weekly injections of crude liver extract. The other two patients in this series are difficult to evaluate, but in neither were any significant changes demonstrated neurologically. The amount of folic acid given to these nine patients varied from 5 mg. orally daily to 30 mg. intramuscularly every two weeks. In all of the nineteen patients the hemoglobin and erythrocyte values were maintained at satisfactory levels but there was no definite increase over the values obtained while the patients received liver extract.

Cases 3 and 6, above, deserve further consideration in regard to neurological lesions. Case 3 had evidence of extensive cord involvement at the time she was first seen. Reflexes were hyperactive. Babinski reflexes were present bilaterally. Position sense was poor and vibration sense was absent bilaterally on the lower extremities. Ataxia and scissor gait were present and she walked only with support. After the initial hospitalization of twenty-four days she was given folic acid 15 mg. orally per day and 30 mg. intramuscularly weekly by her local doctor. On October 8, 1946, one month after discharge, she returned to the out-patient clinic and several examiners felt that her gait was more unsteady. She also complained of inability to control her urine. After unsuccessful attempts to place her in a rest home, she was hospitalized on November 15, 1946. At that time she was psychotic, exhibited marked malnutrition, had a flaccid paralysis of the lower extremities, was incontinent, and had no vibration or position sense in the legs. She also had several large decubiti and there were a number of erythematous areas over the feet and legs which were felt to be due to pellagra. As was pointed out above, her blood values were normal. She was treated intensively with a high caloric diet, crude liver extract, and vitamins. The skin lesions subsided rather promptly and two months later she was mentally clear, was no longer incontinent, and there was some evidence of improvement in the neurological lesions.

Case 6 was maintained on folic acid 10 mg. per day after she developed sensitivity to liver extract. She had definite evidence of neurologic involvement at the time treatment was begun and was poorly nourished. After about seven months she complained bitterly of paresthesias and manifested evidence of progression of the neurological lesions with hyperactive reflexes, a Babinski reflex on the right, and loss of vibratory sense in her legs. She has not improved significantly after two months of intensive therapy with liver extract and vitamins.

Other Conditions Treated

Folic acid has also been tried in a variety of other conditions. One patient with idiopathic hypochromic anemia failed to respond after a month of treatment with 30 mg. of folic acid daily orally. Four patients with hyporegenerative (aplastic) anemias failed to respond. One patient eighty-five years old with a macrocytic anemia due to undetermined cause failed to respond. Another sixty-one-year-old man with a macrocytic anemia and a macronormoblastic marrow failed to respond. A fifty-nine-year-old man who had had a gastrectomy in 1941 developed a macrocytic anemia which did not respond to folic acid orally. The bone marrow before therapy was macronormoblastic.

Results of treatment in one case are very interesting. This patient had a macrocytic anemia with free hydrochloric acid on gastric aspiration. Intermittent diarrhea was present. Liver therapy had been carried out for a prolonged period in adequate amounts, and liver injections were continued while folic acid was given. However, after twenty-three days on 10 mg. of folic acid orally daily, the hemoglobin had risen from 8.5 to 10.6 grams. A reticulocyte response was obtained and reached 14.6 per cent on the sixth day. It is probable that this patient had sprue, but laboratory proof was not available.

Six patients with neutropenia or agranulocytosis have been treated. Three of these were associated with hyperthyroidism in patients receiving various medications including thiouracil or propylthiouracil. In one patient, a marked response occurred simultaneously with the administration of 10 mg. of folic acid intravenously daily. The patient also received pyridoxine and penicillin. The same situation prevailed in the other two cases where there was a less marked rise in the leukocyte count, and again the responses may have been due to other medications. One five-year-old girl with a severe neutropenia of undertermined cause failed to respond and another patient, also with an agranulocytosis of undetermined etiology, demonstrated no apparent response to folic acid. In one patient with a sulfonamide leukopenia the leukocyte count rose from 3,650 to 9,400 cells after three days of treatment. The percentage of polymorphonuclear cells rose from 20 to 68 per cent. This result may well have been due to discontinuing the sulfonamide.

Two patients with nonspecific ulcerative colitis were given folic acid 40 mg. daily for eleven and 100 days, respectively, without a definite improvement in the number or character of their stools. Another patient with nonspecific ulcerative colitis who had had repeated resections of portions of her small bowel in addition to the colon because of extension of the disease failed to respond after fourteen days of therapy. One patient with steatorrhea may have had a response to folic acid but the clinical picture was complicated by hemorrhage from an esophageal diverticulum, and no conclusions can be drawn. One patient with pernicious anemia and an unexplained diarrhea was treated. No improvement in the diarrhea was noted. A temporary improvement was noted in one patient with steatorrhea thought to be due to sprue.

Amounts and Administration

We have used folic acid intravenously, intramuscularly, and orally. When diluted with 10 c.c. of saline, as much as 40 mg. of folic acid has been given intravenously without reaction. Intramuscular injections produce temporary discomfort. No reactions have been noted to oral administration. Doan[20] reports that 125 to 150 mg. given intravenously produce unpleasant histaminelike reactions.

Discussion

The role of folic acid in human nutrition is not at all clear, nor is it established that it is an essential substance as it is in the nutrition of the monkey. Our knowledge at this point permits us to say that given parenterally, orally, or rectally to patients with pernicious anemia and other megaloblastic anemias it produces an apparently complete remission of the blood picture. It apparently fails to exert any beneficial effect on the associated cord lesions of pernicious anemia. The folic acid content of liver has been studied.[11]

by bio-assay methods and the amount of free folic acid present is less than 10 micrograms per cubic centimeter. Oral liver preparations also give a low assay value. Many studies have been reported in which the amount of folic acid in liver and yeast (as determined by bio-assay methods) could be increased by acid or base hydrolysis, or enzymatic digestion, but the amount obtained is not significantly increased.

The above findings have led Spies[5] to postulate that folic acid in food occurs as a conjugate, and patients with megaloblastic anemias are unable to liberate the active substance because of lack of enzymes. He further postulates that liver extract may provide an enzyme capable of liberating folic acid from the conjugated form. The work of Bethell[7] and Heinle[23] tend to support this theory.

Case 3, above, presents another feature which I believe is significant. The question might well be asked if folic acid deficiency plays any part in producing the clinical picture of pellagra. This patient developed what was felt to be pellagra while she was being given folic acid, and responded rather promptly when nicotinamide was given.

Doan[20] has described folic acid as "an essential panhematopoietic stimulus," and Wright and Welch[52] regard folic acid as part of the vitamin B complex. I should like to point out that in several of our patients an unexplained feeling of well-being followed folic acid therapy. In one instance this effect was later secured by giving placebos. In others it may have been due to a dislike for intramuscular injections of liver extract. The improvement in one patient's epigastric distress and bowel habits may have been related to change in bacterial flora of the bowel since folic acid is an essential growth factor for the lactobacilli group and also streptococcus faecalis. It is, however, to be noted also that several patients felt better after liver extract therapy was resumed.

In the present state of our knowledge it does not appear possible to state clearly the indications for the clinical use of folic acid. Certainly it appears that folic acid should be given to every patient who appears to have sprue. There appears to be sufficient evidence to warrant its continued use and evaluation in neutropenias and agranulocytosis, particularly those due to sulfonamides. In some of the megaloblastic anemias where spinal cord lesions are not present it may be made more desirable than liver extract, particularly where there is sensitivity to the latter. It also seems quite possible that it may be an essential vitamin.

Conclusions

From our studies it seems fair to draw the following conclusions:

1. Folic acid (pteroylglutamic acid) parenterally is capable of inducing a complete remission in Addisonian pernicious anemia and, given orally or parenterally, is capable of maintaining normal blood values for a period of at least five months.

2. It appears to exert no beneficial effect on the spinal cord lesions of subacute combined degeneration.

3. Macrocytic anemias in which a megaloblastic marrow could not be demonstrated did not respond to folic acid.

4. It does not appear to be of any benefit in the other conditions in which it was tried, with the possible exception of the sulfonamide leukopenias.

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PRACTICE BY APPOINTMENT

Criticism of the individual members of the medical profession is encountered in every survey and test being made to find answers to problems of public relations. Laymen complain that "they are being pushed around by the doctors." Just today we were told of a patient trying to find a doctor in one of our larger towns. The patient had an earache too severe for ordinary remedies, but could see the otologist only by appointment, and the first available date was two weeks ahead. Too often the doctor's appointments are made up as far as six weeks in advance.

Industrialists complain that if a worker has to go to a doctor during working hours it takes at least three hours, and causes too many lost man-hours. And the patients that do get in to see the doctor complain that the appointment is crowded into so little time that they feel as though they are on an assembly line.

Tens of thousands of our doctors have returned from military service where they became used to fixed hours, and shorter hours for their work. Labor and the government have impressed upon all of us the ideal of a forty-hour week. Doctors, especially the younger ones, are adjusting their practices to short hours filled with appointments, and these are made far in advance. Such a regime makes for the complaint that doctors are hard to find; that there are too few of them.

During the war many of our busy doctors found that they were not rendering the best possible service by the appointment system, and opened their offices to all comers; first come, first served. The office doors would be closed at a designated hour, and the doctor would care for all who remained before leaving. People complained of having to wait sometimes a long while, but they did get medical care. This plan should appeal to some doctors in each community.

If doctors continue to practice by appointment, and since the public is really entitled to medical attention, we would suggest that every day of appointments include one hour or a specified time for patients without appointments.—Editorial, *Journal Michigan State Medical Society*, October, 1947.

CLINICAL-PATHOLOGICAL CONFERENCE

DIAGNOSTIC CASE REPORT

KARL W. EMANUEL, M.D., MALCOLM GILLESPIE, M.D., and ARTHUR H. WELLS, M.D.
Duluth, Minnesota

DR. K. W. EMANUEL: Mrs. E. P., aged thirty-nine years, consulted me on June 4, 1947, complaining of diarrhea, occasional vomiting, and some cramp-like abdominal pain associated with her diarrhea beginning May 7. The diarrhea had stopped at the time I saw her, and her chief complaint was itching of the skin associated with some areas of papular dermatitis. The physical examination was essentially negative throughout, with normal blood counts and routine urine analysis. On June 6, she again came to my office, stating that her skin had become very yellow during the preceding two days. She had also noticed some weakness and itching. Her icterus index was 70 units. The red blood cell sedimentation rate was 75 mm. in one hour (Westergren) and there was a 2 plus bile in the urine. The white blood cell count was 12,250. Her pulse and temperature were normal. The examination was otherwise essentially negative. There were no clay-colored stools. Hospitalization was advised, but refused. She was, therefore, placed on proklats and ketochal. On June 11, her icterus index had dropped to 69 units. The red blood cell sedimentation rate was 65 mm. and the urine had 1 plus bile. Besides jaundice and associated itching, she was beginning to feel definitely weaker. Her appetite was fair, and there was no nausea or vomiting. The stools were normal in color and in frequency. Hospitalization was again urged, but refused. On June 16, her icterus index had dropped to 60 units. The sedimentation rate was 55 mm. and the urine showed a trace of bile. The jaundice had receded slightly but there was still considerable itching. Her weakness was more profound than on previous visits. The hemoglobin was 94 per cent and the red blood cell count was 4,480,000. Her stools were lighter in color but not clay-colored.

Because of her profound weakness, she consented to enter the hospital on June 22. While at home she had noticed some chills and a slight fever for a couple of days. There had also been a loss of from 5 to 10 pounds in weight since the onset of the present illness which she felt to be due to loss of appetite.

She was a well-developed and well-nourished white woman with a grade III jaundice. There were marked deformities of the hands and feet due to rheumatoid arthritis. The blood pressure was 130/80. Temperature, pulse, and respiration were normal. The abdomen had no tenderness whatever. The gall bladder and other masses could not be seen or felt. The cardiac, lung, pelvic and rectal examinations were essentially negative.

The family history was not contributory. She had five children, living and well. All her pregnancies had been normal. She had had no operation. She had had pneumonia once and had suffered from rheumatoid arthritis for many years.

Laboratory findings: A four-day stool was negative for urobilinogen. A twenty-four hour urine specimen contained bile, but no urobilinogen. The blood cholesterol was 267.0 and cholesterol esters 51.5 mg. per cent. A cephalin flocculation test on June 24 was negative, and on June 27 it was 1 plus. The alkaline phosphatase was 40.6 units (K.A.). The direct Van den Bergh was 16.4 mgm. per cent and the indirect Van den Bergh was 1.85 mgm. per cent. The benzoic acid excretion test revealed 3.33 gm. excreted in three hours. There were 6,400 white blood cells with a normal differential count. The red blood cells totaled 3,970,000 and the hemoglobin was 14 gm. The red blood cell sedimentation rate was 97 mm. in one hour (Westergren). A red blood cell fragility test was normal. X-ray studies showed a nonvisualization of the gall bladder and no changes in the stomach or duodenum.

DR. A. H. WELLS: The case is now open for diagnosis.

PHYSICIANS: Choledocholithiasis, acute hepatitis, carcinoma of the liver.

DR. E. L. TUOHY: The absence of urobilinogen in the stool and urine plus normal results with liver function tests even after a month of jaundice make this an almost certain case of carcinoma blocking the common duct.

DR. F. J. HIRSCHBOECK: More specifically, this is a case of carcinoma of the papilla of Vater. This type of cancer is much more likely to result in a fluctuating jaundice than carcinoma of the pancreas.

DR. M. G. GILLESPIE: Through a mid-right rectus incision, exploration revealed a distended gall bladder and common duct without stones. Dake's smallest dilator passed through the ampulla without much difficulty. However, we opened the duodenum vertically to expose a tiny nonpalpable mass on the papilla. A Whipple operation was performed, with resection of the head of the pancreas, the first and second portions of the duodenum, the pyloric end of the stomach and the terminal end of the common duct (Fig. 1). The remainder of the head of the pancreas was sutured into the end of the first part of the jejunum and the common duct joined

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From the Department of Pathology, St. Luke's Hospital, Duluth, Minnesota.

end to side with the same loop a few centimeters distally. The patient had a completely uncomplicated convalescence. A T-tube left in the common duct came out about two weeks after the operation, and its sinus tract closed immediately.

Dr. A. H. Wells: The lesion involved the very margins of the orifices of the common duct and duct of Wirsung, and extended distally on the duodenal mucosa for 5 mm. (Figs. 2 and 3). There was a severe dilatation of the two ducts with thickening of their walls. Microscopically (Fig. 4) the adenocarcinoma appears to have had its origin from the epithelium of the two ducts at their transitions to the duodenal mucosa. No extension into the head of the pancreas or through the duodenal musculature could be found. I predict a complete cure.

Frequency

In a group of 464 cases of carcinoma of the gall bladder extrahepatic ducts, and the major duodenal papilla, there were 291 cases originating in the bladder, 119 in the ducts, and 54 in the papilla. Carcinoma of the latter represented 1.13 per cent of the cases of carcinoma found in 26,306 necropsies.[15] Cancer of the papilla is reported in a ratio of from 2:1 to 6:1 predominance in males. Although this malignancy may occur at any period of adult life, the mean age is approximately 56 years.[16]

Etiology

The most convincing theory[6,7,16] as to the etiology of carcinoma of the papilla concerns the little known, yet remarkably frequent tendency for the normally prominant valvelike folds of the epithelium inside the orifice of the papilla to form adenomatoid hyperplastic polyps. It is generally accepted that this pathologic manifestation is a common precursor of cancer in the rest of the gastrointestinal tract. Recurrent inflammation may be the instigator of the polyps.[7] Gallstones occur in 50 per cent of the cases of carcinoma of the gall bladder, in 31 per cent of the cases of cancer of the extrahepatic ducts and in only 17 per cent of the malignancies of the papilla.[8]

Pathology

Carcinomas of the papilla may have their origin from seven possible epithelial structures: (1) common duct, (2) pancreatic duct, (3) the confluence of ducts (ampulla), (4) Lieberkuehn's glands of the duodenum, (5) Brunner's glands, (6) aberrent pancreatic glands and (7) Dradinski's mucous glands of the papilla. In most instances, tumors of these different sources cannot be differentiated and for practical purposes are grouped as adenocarcinomas of the major duodenal papilla, caruncula major, or papilla of Vater. Since an ampulla does not exist in 43 per cent of the papillas[16] and the tumors can be demonstrated in some instances to arise from most of the above normal sources, the frequently used term of carcinoma of the ampulla of Vater should be discarded as inadequate.

Very rarely other malignant tumors including melanoma, lymphosarcoma, and spindle cell sarcoma have been described.[9,14] Rarely, benign neoplasms have been found causing clinical manifestations.[1] They include papilloma, adenoma, lipoma, fibroma, neuroma, granuloma, melanoma, and carcinoid. Benign duodenal ulcers rarely occur on the papilla.[1]

The epithelial malignancies are nearly all adenocarcinomas. They have a decided tendency to become papillary and are frequently described as infiltrating and ulcerating. Rarely they form much mucus. They tend to be of low histologic grade. They range up to 3 cm. in diameter, and are frequently too small for the surgeon to palpate through the duodenal walls. The fact that less than half of the cases have metastasized even at the time of death makes this malignancy unique among the cancers of the gastrointestinal[16,17,18] tract. Metastases do occur late in the adjacent lymph nodes, pancreas, and liver in some cases.

Cited as the reasons for the rapid exitus which averages seven and a third months from the onset of symptoms in untreated cases are: cholemia, cholangitis, liver abscess, empyema of the gall bladder, acute peritonitis, suppurative pylephlebitis, exsanguination from intraduodenal hemorrhage, duodenal obstruction, cachexia, and pneumonia. Other anatomical complications result from blocking the common duct and Wirsung's duct, include a dilatation of the gall bladder (possibly 90 per cent), dilatation of intrahepatic bile ducts, hydrops of the gall bladder and extrahepatic ducts, cholecystitis, dilatation of the major pancreatic duct (majority), pancreatic fibrosis and atrophy.

Clinical Manifestations

Dr. K. W. Emanuel: The early occurrence of signs and symptoms of malignancies of the papilla of Vater depend primarily upon their strategic location and almost universal obstruction of the flow of bile and to a less extent on the frequent obstruction of the pancreatic duct. The consequent jaundice is nearly always present and is the chief complaint in the majority of cases. In the majority of patients the jaundice is constantly present with some fluctuation and slow progression.[21] A few cases with intermittent icterus are explained upon the basis of ulceration and necrosis of the obstructing malignancy. Occasionally the jaundice is continuous and progressive without fluctuation and rarely there is no jaundice.

Contrary to the general belief, these patients do not have a painless jaundice, but over 50 per cent have a colicky or continuous pain in the epigastrium right upper quadrant or elsewhere in the abdomen.[17] The pain is generally not severe and may decrease in severity.

Pruritis, rapid loss of weight, anorexia and progressive weakness are outstanding and frequent complaints. Chills and fever occur in over 50 per cent and simulate these symptoms in common duct calculus. Light colored or acholic, tarry and steatorrheal stools have been described. Nausea, vomiting, diarrhea, severe constipation, bloating sensations and eructations are occasionally noted. In some hands distended gall bladders are palpable in over one half of these patients.[21] Courvoisier's law is proved correct in 83 per cent of the cases at the time of laparotomy.[18]

A barium meal and roentgren study may reveal some deformity in the second part of the duodenum and prove helpful in ruling out other gastrointestinal diseases. An abdominoscopic examination has been considered of use.[22]

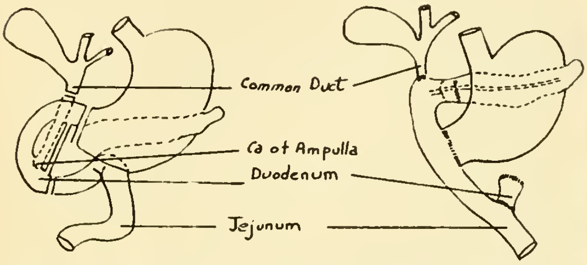
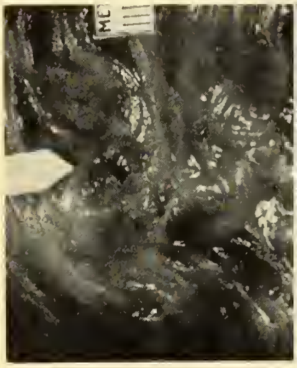


Fig. 1. Diagrams of one-stage pancreatoduodenectomy.



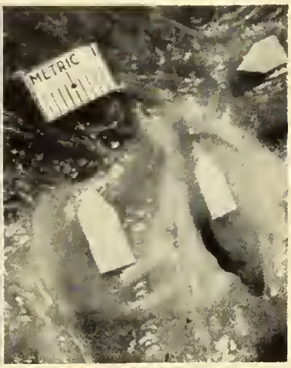


Fig. 2. *(left)* Arrow points to the duodenal mucosal surface of the carcinoma on top of the papilla of Vater.

Fig. 3. *(right)* Arrows point to the early carcinoma about the margins of the dilated (in order) common duct and duct of Wirsung, also an extension down on the duodenal mucosa.

The literature on carcinoma of the papilla of Vater is dominated by surgical interests which may explain the great paucity of data concerning exact measurements of physiologic processes. When the figures are known, we predict that the laboratory can be of considerable help; first in differentiating obstructive (surgical) from intrahepatic (medical) jaundice and second, in aiding in the determination of the exact location of the lesion. The patient we have presented is an illustration of how the various liver function tests (cephalin flocculation, galactose tolerance, benzoic acid excretion, blood cholesterol and cholesterol esters) are negative for diffuse disease of the liver and how the complete absence of urobilinogen of the stool and urine leads to the clinical diagnosis of carcinoma obstructing the common duct. Other aids are found in the fact that occult blood occurs in the stools in a majority of patients with cancer of the papilla. Also blood amylase and lipase may be increased due to the pancreatic duct obstruction. Duodenal aspiration of blood with little or no bile is considered helpful.[21]

One must clinically differentiate carcinoma of the major duodenal papilla from: cancer of the pancreas, common duct calculus, stricture of the common duct, cholecystitis, cirrhosis of the liver, hepatitis, empyema of the gall bladder, duodenal ulcer, carcinoma of the liver and others. The most important of these, carcinoma of the head of the pancreas, is less likely to have occult blood in the stools and is more likely to have a rapidly developing to complete and continuous obstruction of the common duct, a longer prodromal phase of abdominal pain, weight loss, anemia and cachexia before the appearance of jaundice,[3] a palpable mass, and x-ray evidence of an enlarged head of the pancreas.

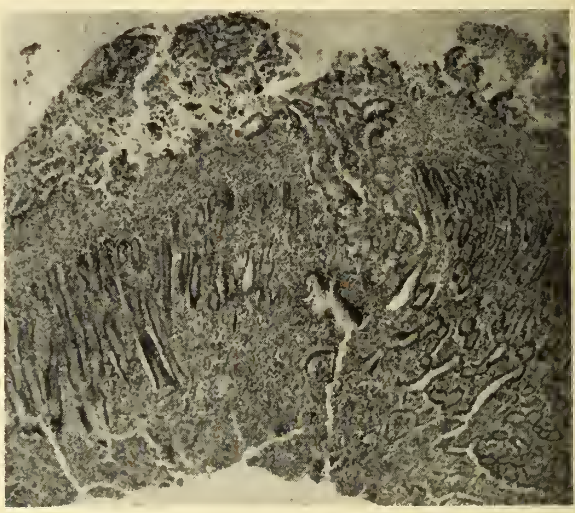


Fig. 4. Photomicrograph showing an adenocarcinoma at the margin of the common duct with beginning infiltration of the normal duodenal mucssa covering the outside of the papilla of Vater.

The diagnosis is rarely made before and never established until a surgical exploration is performed. No patient should be permitted to go more than a few weeks with an obstructive jaundice without a laparotomy.

Treatment

Dr. M. G. Gillespie: Barring a surgical death, the excellent prognosis following radical resection of carcinoma of the papilla of Vater has led to a wide variety of techniques in an effort to circumvent the many disasters evidenced throughout the literature on this subject. In a review[17] of 124 collected cases there was a 30.6 per cent surgical mortality. In one review[12] of thirty-eight deaths, twelve died of hemorrhage, five of peritonitis, three of duodenal fistula, two of shock, two of pneumonia, and fourteen were not stated. Five factors of poor success have been listed[14] as (1) the insidious onset of the disease, (2) the poor condition of the patients, (3) the relative inaccessibility of the lesions, (4) the proximity of important structures which cannot be sacrificed, and (5) technical difficulties. In spite of these, radical resection has sustained life for a longer period than conservative treatment and it offers the only prospect there is of a cure. With the advent of vitamin K, a more liberal use of blood transfusions, chemotherapy and improvements in surgical techniques, surgical mortalities have decreased considerably.

No single operative procedure is suited for all varieties of tumors of the papilla.[5] The mistake of performing a radical resection for a benign papilloma followed by surgical death[11] is indeed unwarranted. In such benign lesions and possibly selected tiny malignant neoplasms, local resections with reimplantation of the common bile and pancreatic ducts may be indicated.[13] Most surgeons prefer a one- or two-stage radical resection.[9,18,23,24] If the pancreatic duct is tied off, disturbances in carbohydrate and fat metabolism may develope.[10,19,23] The feeding of lecithin, choline and pancreatic extract or lipocaic have been advised for both preoperative and postoperative care.[20]

Because of the fibrous adhesions resulting from the first procedure, we favor a one-stage radical resection in those cases where there are no demonstrable metastases and in which the patient has been suitably prepared and is a good operative risk.

Summary

The case of a thirty-nine-year-old woman with a carcinoma of the papilla of Vater is presented as a diagnostic study. Over a five-week period she suffered with diarrhea, vomiting, colicky abdominal pain, a slowly progressive, apparently fluctuating jaundice and pruritus followed by loss of from 5 to 10 pounds of weight, profound weakness, chills and fever. The laboratory studies revealed no urobilinogen in the stools or urine, and normal results in a series of liver function tests. A radical (Whipple) resection of the malignancy has almost certainly resulted in a cure.

A very brief review of the literature concerning the frequency, etiology, pathology, clinical manifestations and treatment of carcinoma of the papilla of Vater is presented.

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(Continued from Page 1166)

problem of great importance. The key to an early diagnosis is constant awareness of the disease.

3. Emetine cardiotoxicity and a brief review of the experimental and clinical literature is cited. The fact that emetine cardiotoxicity may occur with the usual therapeutic doses is stressed.

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History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

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(Continued from October issue)

Jay Le Roy Sackett, the only son and one of the three children of Dr. and Mrs. Reuben N. Sackett, was born at St. Charles, Winona County, in the late fifties. His father and mother were of the finest type of pioneer settlers of southern Minnesota, in Olmsted, Fillmore and Winona Counties.

Reuben Nathaniel Sackett was born on December 8, 1825, in Chautauqua County, New York, obtained his general education and medical training in his native state and was admitted to practice in Syracuse. On August 11, 1854, he was married to Julia A. Palmer and in May of 1855 the young couple moved to southern Minnesota, to settle first in Olmsted County, in Quincy Township; in this period he was known as Dr. Nathaniel R. Sackett. Subsequently Dr. and Mrs. Sackett lived in St. Charles, Winona County, where the doctor had a medical and surgical practice, and later they were in Janesville, Waseca County, and in Windom, Cottonwood County. At one period, presumably before moving into western Minnesota, Dr. Sackett practiced for a time in Chatfield, Fillmore County. Of the two daughters of the family, Zilpha Estell died in infancy; Nettie was married to A. G. Chapman, a lawyer, of Lanesboro. Dr. Sackett was active in the Masonic order and as a charter member helped to organize lodges at St. Charles, Janesville and Windom. He and his wife for more than seventy years were members of the Methodist Church. Mrs. Sackett died at the home of her daughter, in Lanesboro, on November 21, 1914; Dr. Sackett died on December 20, 1920, in a hospital at Rochester; both were buried at Lanesboro, where they often had visited Mr. and Mrs. A. G. Chapman and where they were well known.

Jay Le Roy Sackett received his preliminary education in the schools of St. Charles. Later he was a student at Hamline University, in Saint Paul, and took his medical training at the Hahnemann Medical College of Chicago, from which he was graduated in the late winter of 1887; soon afterward he was licensed to practice in Minnesota, receiving certificate No. 1328 (H), dated March 16, 1887.

Just at that time Dr. James M. Wheat, since 1856 a highly respected physician and surgeon in Lenora, Canton Township, Fillmore County, was moving permanently to California, and Dr. Sackett, young, "a fine looking man of the brunet type, intelligent and quick," succeeded to his practice. The village of Lenora, in a prosperous community fourteen miles from Lanesboro, its nearest railway point, and five and a half miles from Canton, once was expected to become a railway town but, like many another village in the county, had been left on one side by the Southern Minnesota Railroad in 1870, so that its fortunes had dwindled; even in 1887, however, it had 125 residents, a school, a hotel, two churches and several stores, daily mail and tri-weekly stages to Canton and Rushford.

His promising career so well begun in Lenora was cut short after only two years when Dr. Sackett contracted tuberculosis; in the hope of benefiting from change of climate he removed to San Antonio, Texas, but he did not improve and died in San Antonio soon after his arrival there. His wife, who had been Minnie Spencer, of St. Paul, survived him; there were no children. After her husband's death Mrs. Sackett returned to Saint Paul, where she remained until, some time in 1898, she removed to Colorado.

A **Dr. Schoolcraft,** of Fillmore County, started for Devils Lake, North Dakota, on Monday, stated the *National Republican* of Preston on April 8 (Thursday), 1886; in subsequent issues Mrs. Schoolcraft was mentioned several times as "canvassing for a number of useful works." Other mention of this physician, if he was a medical practitioner, has not been noted.

Louis Dwight Shipman, the only child of Mr. and Mrs. Dwight Edson Shipman, was born on April 11, 1875, at Morrisville, New York, where his father, a native of Easton, New York, owned a clothing manufactory; his mother, Augusta Ann Wales, was born at Morrisville.

In 1890 Louis Shipman came with his parents to their new home in Minneapolis and there continued the education which he had begun in the schools of Morrisville. After completing his high school instruction at the Lyndale School and taking collegiate courses at the Minneapolis Academy, he entered the University of Minnesota College of Homeopathic Medicine and Surgery, from which he was graduated on June 26, 1896, with the degree of doctor of medicine.

The scene of Dr. Shipman's earliest medical practice was Fillmore County, first in the village of Preston, from 1896 to 1898, and next in Canton, which offered better financial opportunity. Young Dr. Robert L. Conkey, new in his profession, had died in Canton in that year, and Dr. Robert A. Sturgeon, in his seventies and for many years past an invalid, was not in active practice, so that Dr. Henry H. Haskins, in his middle fifties and perhaps already planning his retirement (1902) from practice, was the only resident physician. Here for the next four years Dr. Shipman served the community as a private physician and surgeon and for a time as county physician. On April 10, 1901, he was married to Bertha McKinney, at Canton. Dr. and Mrs. Shipman had two children, Cleon Dwight and Gladys.

Successful though he was as a general practitioner, Dr. Shipman early determined to become a specialist and in 1902 he left Canton to take postgraduate work at the Chicago Eye, Ear, Nose and Throat College and Hospital. On completion of this course, early in 1903, he went to London, England, to study and there he first was a clinical assistant at the London Central Throat, Nose and Ear Hospital and later at the Royal Ophthalmic Hospital. At the end of 1903 he became acting house surgeon of the London Throat Hospital; it has been said that had he been the holder of a degree from an English medical school, as was required by the hospital for members of its professional staff, he would have been appointed house surgeon; as it was, his position was the highest which up to that time had been held in the institution by an American.

In the spring of 1904 Dr. Shipman returned to Minneapolis, to open offices in the Medical Block, 608 Nicollet Avenue, as a specialist in treatment for diseases of the ear, nose and throat. His announcement card of April 1 included the lines, "Finsen's London Hospital Light, Ultra-Violet Rays and Eclectical Treatment of Lupus, Tuberculosis, Growths and Diseases of the Nose, Throat, Ear and Face."* Well qualified professionally and personally, and possessing in addition the ability to write with clarity and interest on subjects medical and nonmedical, Dr. Shipman entered on a career in which he soon received recognition, for in 1907 he was appointed a member of the faculty of the Medical School of the University of Minnesota. He was never to realize his new position; in the week that the appointment was confirmed, Dr. Shipman contracted diphtheria from a patient whom he was treating for the disease and died within a few days, on February 5.

Distinguished in appearance, tall and slender, with blue eyes and wavy dark brown hair, Dr. Shipman was genial, friendly and considerate in all his relationships. The interest in community life which he had shown in Canton he broadened in Minneapolis, transferring his membership in the Masonic order to Lodge No. 19 in the city and becoming an active member of the Linden Hills Congregational Church, instrumental in the organization and functioning of its men's club. Happiest when in his home, he was the kindest of husbands and fathers and was a gracious and delightful host to many guests.

After Dr. Shipman's death Mrs. Shipman with the two children, both of whom were born in Minneapolis, remained in the city and in 1943 she continued to reside there as did her daughter Gladys (Mrs. R. B.) Nelson, and her son, Cleon Dwight Shipman, associated with the Graybar Electric Company.

Reuben Farmer Spencer, who was born in December, 1834, at West Burke, Vermont, received his early education and medical training in the East. In 1856, when he was twenty-two years old, he traveled west to Wisconsin, where he taught school and practiced dentistry until, sometime in 1861, he first entered Minnesota. In the next fifteen years, judging from different comments, he changed locations various times; in 1865 he returned to Wisconsin and then to Vermont, and in 1868 he came again into Minnesota, to remain three years before traveling on into Dakota Territory, where he practiced medicine for several years. Finally, in 1877, he settled permanently in Minnesota, in the village of Etna, on the Root River, in the southeastern corner of Bloomfield Township, Fillmore County, eight miles from Spring Valley and twenty miles from Preston.

In those years Etna (laid out in the early fifties as "Tiffton," sometimes seen "Tefton," a name rejected by common consent) had a population of fifty, daily mail and stage connections with Spring Valley and also with Lime Springs, Iowa. The Root River furnished power for grist mills. Hopefully, as late as 1883, a business gazetteer announced that a good store was needed in the village. In the early seventies Dr. J. J. Morey, recently of Spring Valley, was practicing medicine in Etna; perhaps he still was there when Dr. Spencer came.

For seventeen years, until his death in 1894 at the age of sixty years, Dr.

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*Neils Ryberg Finsen, Danish physician (1860-1904).

Spencer carried on from Etna a general medical and surgical practice in a large territory which extended as far north as Spring Valley; he was well known and highly respected. In 1882 he served as justice of the peace in Etna. On October 25, 1883, under the "Diploma Law" of that year he received state certificate No. 185-3, which he filed in Fillmore County on November 26, 1883.

Reuben F. Spencer was married in 1874 to Carrie M. Howey, of Wisconsin. Of the two children of the marriage, one was living in 1943, Mrs. Edwin Finch, of Vulcan, Province of Alberta, Canada, and in this year also Mrs. Spencer, at the venerable age of eighty-eight years, had long been making her home in Spring Valley.

Aaron Marshall Stephens was born in June, 1842, at Frankfort Springs, Beaver County, Pennsylvania, the son of J. Stephens and Elizabeth Marshall Stephens, and a descendant of an English family who were colonists in Virginia in 1607. Little record exists of his early years except that he was left an orphan when he was a child, that he taught school when he was a youth, that he was interested in science and microscopy, and that he early became a Methodist minister. In 1866 he first came to Minnesota to occupy the position of professor of mathematics and natural science at Hamline University (then in Red Wing, Goodhue County). In 1879 he received the degree of master of arts from One Study University, in Ohio, and soon afterward, accompanied by his wife, he came to Chatfield, Fillmore County, to fill the pulpit of the local Methodist Church.

After some years in Chatfield The Reverend Mr. Stephens, A.M. (he always used these letters) left the church and temporarily left the village to prepare for entering the profession of medicine. It is recalled in Chatfield to the credit of this clergyman and his wife that, before Mr. Stephens was able to enter medical school, they joined in surmounting the financial difficulties of the undertaking by assuming additional employment, he in extra-clerical work in the railroad roundhouses that were a feature of Chatfield in those years, and she as a saleswoman in a local store.

Dr. Stephens was forty-one years old when, early in 1883, he was graduated from the Hahnemann Medical College and Hospital of Chicago and returned to Chatfield in his capacity as physician and surgeon. The *Chatfield Democrat*, on March 8, 1883, carried the following item: "Degree of Doctor of Medicine and Surgery conferred on Rev. A. M. Stephens, A.M., on February 21, 1883, at the Grand Opera House, Chicago, by Hahnemann Medical College and Hospital. We expect the doctor home in a few weeks." And this note was followed on April 21 by a second: "Dr. A. M. Stephens, A.M., returned last week from Hahnemann Medical College and Hospital of Chicago, where he has been attending lectures the past year. Dr. Stephens has spent several years in the careful and earnest pursuit of medical studies, besides attending the full course of lectures and is already well qualified for his profession. He will remain for the present with his family in Chatfield and engage at once in the practice of medicine." On April 19, 1884, Dr. Stephens received his license, No. 875 (H), to practice medicine in the state, and on April 25 filed it in Fillmore County. His office was in his residence, "near the foundry."

This physician is remembered in Chatfield as a quiet, kind and fatherly man, large and rather portly, who had dark brown hair and a long full brown beard, unflecked by gray. Respected as a clergyman in the community, on his graduation from medical school he was well received as a physician by the residents. Children delighted in going to his office, both because they were fond of him and because he kept there in a cage some fascinating white rats —the psychologic effect of which no doubt aided therapeutics as represented by Dr. Stephens.

During his years as a general medical practitioner in Chatfield, Dr. Stephens served for a time as the local health officer and as an examining surgeon on the board of pensions of the district. He also maintained an active interest in the Methodist Church, occasionally preaching in Chatfield and in other villages, and worked for betterment of the schools; in 1889 he filled a vacancy on the board of education, and in 1890 was elected for three years, a term which ended with his resignation on June 28, 1892.

After eight years as a physician in Chatfield, Dr. Stephens moved, in the summer of 1892, to the suburbs of the Twin Cities, making his home in Hamline and engaging in the practice of medicine with Dr. Sheridan G. Cobb of Merriam Park. In 1895 he returned to his first Minnesota home, Red Wing, and there for the next thirteen years he followed his profession.

Aaron Marshall Stephens was married in 1864, at Waterloo, Iowa, to Mary Bishop, a schoolteacher, of English descent; Mary Bishop, like her husband, had early been left an orphan and little is known about her family. Dr. and Mrs. Stephens had two children, Ray Bishop Stephens, who died in Chatfield in 1890 at the age of eighteen years, and Alice M. Stephens, who became a trained nurse.

Dr. Stephens died in Red Wing on September 21, 1913, after a year and a half of illness which followed a stroke of apoplexy. He was survived by his wife and his daughter. Some time after her husband's death, Mrs. Stephens moved from Red Wing to Chicago, where her daughter had been since 1910, and there she lived out her long life, dying at the Old People's Home on May 28, 1943, within two weeks of her ninetieth birthday. Miss Stephens, retired from the profession of nursing, in 1943 was still residing in Chicago.

Robert Anderson Sturgeon was born at Belfast, Ireland, on June 7, 1824, the son of John Sturgeon and Elizabeth Anderson Sturgeon, both of whom were natives of Ireland. The five other children of the family were William, John, George, Samuel and Elizabeth.

Robert Sturgeon received his education in Belfast: his academic schooling at Dr. Bryce's Academy, his training in pharmacy, medicine and surgery at Queen's College, and, after his graduation as a physician, in 1848, two years' work at the Belfast Hospital, a postgraduate service of inestimable value. From Belfast he went to England, purposing to sail for America in search of an older brother who had emigrated some years previously, and from Liverpool he embarked as medical officer on the *Silas Greenman,* bound for New York. After much search and inquiry he traced his brother to Montreal, Canada, only to learn that he had died in that city, leaving a wife and several children.

Liking the city, Dr. Sturgeon established himself in Montreal and practiced medicine there for three years. After the death of his wife, Harriet Scriver, a Canadian to whom he was married in Montreal, he left Canada for the Middle West of the United States, where he settled first in Burr Oak, Winnesheik County, Iowa, about three miles south of the state line between

Iowa and Minnesota. After two years in that community he was attracted by the thriving village of Elliota, just inside Minnesota, in Canton Township, Fillmore County, and removed to that place in 1855, as nearly as can be determined.

Elliota, sixteen miles equidistant from Preston, Minnesota, and Decorah, Iowa, although for many years now a phantom village, was one of the most interesting of the early settlements. It was laid out in 1854, as stated earlier, by Captain Julius W. Elliott, a native of Vermont, who came to Minnesota Territory from Moline, Illinois, in 1853, bringing with him a company of pioneers. The first buildings of the village were burned but soon were replaced and by 1858 the settlement was an important mail station at the intersection of several stage lines, one of which was M. O. Walker's route from Dubuque to St. Paul. In its palmiest days Elliota had three hotels, the Elliott, the Lewis and the Crags, two stores, a stone school house, built at a cost of $900, a drugshop (probably Dr. Sturgeon's), a mechanic shop, and at that time, it was stated, there was need of a grist mill and a sawmill. The only early physician in Elliota other than Dr. Sturgeon of whom note has been found was Dr. Thomas Little.

Dr. Sturgeon's residence in Elliota was interrupted by his military service during the Civil War; record has not been available, except that he was with the Union Army in Missouri. In the year after the close of the War, on July 18, 1866, Robert Anderson Sturgeon was married to Jane Young, who was the daughter of a farmer near Elliota and was a native of Dumfermline, Fife County, Scotland. The six children of the marriage were Helen, Georgina, Robert, Harriet, Florence and William. The family were members of the Presbyterian Church.

In Elliota Dr. Sturgeon remained for many years, contributing largely to the interest and welfare of the community and sharing its fortunes, which inevitably declined after the railroad passed the village by; in 1882 the greater part of the business of the place was transferred three miles northeast to Boomer (later named "Canton"), also in Canton Township; Boomer was founded in 1879 but was not incorporated as the railway village of Canton until 1887. The postmasters of Elliota, after Captain Elliott, were Mr. Dickson, Mr. Wilcox, Mr. Morrell and, finally, Dr. Sturgeon, who closed the office and surrendered the key of the mail pouch in April, 1882. In that final year Elliota had only fifty residents; there were still functioning one hotel, three flour and grist mills of four run of stone each, two churches and the school, and there was to be for a time stage connection with Rushford, Minnesota, and with Decorah and Cresco, Iowa.

In his drug store in Elliota Dr. Sturgeon maintained his offices and compounded his own medicines. The story is told of one of his prescriptions, which was given to a patient who had contracted a severe cold after breathing in dust while handling rubbish: The advice was to inhale the steam from a mixture of iodine, oil of tar and water; the patient followed instructions and the congestion cleared up promptly. In 1881, preparatory to removal to Boomer, Dr. Sturgeon was having his store and office building taken down and reconstructed in the new village.

In 1882 Dr. Sturgeon settled with his family in Boomer, or Canton, where for nineteen years he continued to win and hold the love and confidence of the community for his gentleness and professional skill and his capability and dependability as a citizen. Under the medical practice act of 1883 in Minnesota he received certificate No. 1172, given on March 24, 1886, and filed in Fillmore County on the following May 6.

The last twenty years of his life Dr. Sturgeon was a semi-invalid, as the result of a stroke; one arm was paralyzed and he walked with a cane, but he nevertheless consulted with patients, managed his drug store and, from 1893 to 1897, served as postmaster for the village. In the latter year, when his health was failing greatly, and subsequently, his daughter Georgina and his sons Robert and William in turn took his place as postmaster. His position in the esteem, respect and gratitude of the community was such that no one even considered making application for the office of postmaster as long as a member of the Sturgeon family was willing to fill it.

Dr. Sturgeon's professional contemporaries in Canton were few. Dr. Henry H. Haskins was the chief and eldest, practicing in the village from 1878 to 1902. Dr. C. Wilbur Ray was in practice there in 1894 and 1895. Dr. Robert L. Conkey, a native of Preston, in his brief medical career, was in Canton only a year, in 1897 and 1898, before his untimely death. Dr. Louis D. Shipman, beginning in 1898, spent four years in Canton, as noted, before leaving to prepare for specialization in ear, nose and throat work.

That Dr. Sturgeon was a cultured gentleman of warm and vivid personality and a physician of exceptional native ability and professional training is certain. Although not consciously humorous, he possessed a lively fancy and a felicitous turn of phrase that distinguished him among the less articulate. One of his friends and truest admirers, the late Dr. George Kessel, of Cresco, Iowa, who was a boy when Dr. Sturgeon was in his prime, gave the writer a verbal picture of a tall, well-built man who had black hair and wore a black mustache and whose eyes, once seen, were never forgotten, of more than medium size, so darkly blue as to look black under heavy overhanging black eyebrows, and holding always a little twinkle that indicated that they were friendly and kindly eyes. Dr. Sturgeon was a man of arresting personality, dignity and almost military bearing; of polished diction and extensive knowledge of the world's great literature in Latin and in English; Latin he used freely, but he quoted most often from the Bible and from Shakespeare. "He seemed so different from our neighbors roundabout us on the farm."

In his earliest years in the county, in the immediate community of Elliota, Dr. Sturgeon commonly rode on horseback to make his calls, carrying his drugs and instruments in saddlebags. In those times Indians were objects of fear to the settlers, and wild animals were a menace to the denizens of barnyards and poultry runs, so that almost every family in rural neighborhoods kept at least one competently savage dog to protect them and their possessions from marauders, two-legged or four-legged. The dog could not or did not always discriminate and therefore Dr. Sturgeon, being a prudent man, when arriving at a homestead would not dismount until the guard had been called off and pacified. After he had given up horseback riding, Dr. Sturgeon always employed a driver in going about his business in horse-drawn vehicles. Dr. Kessel described the doctor on drives in winter, sitting erect in his cutter, his head up, his highly colored long scarf wrapped around his shoulders and crossed over his chest in a bright "X," an accessory "that was attractive and again made him look different from other people." And further, "He was a wonderful man, one of the pioneer characters, and a real character he was . . . enough . . . to make a book in himself."

Robert Anderson Sturgeon died in Canton on January 8, 1901, from paralysis. Of his family group there was living in 1943 Georgina Sturgeon, of Amboy, Minnesota, and William Sturgeon, of Santa Ana, California.

Jerome B. Tamblin, who was in Lanesboro, Fillmore County, in the early eighties, came to Minnesota indirectly from New York. Arriving in Winona in 1867, he established his residence at 159 Third Street and opened an office in Ford's New Brick Block on Second Street, announcing himself as doctor of medicine, physician and surgeon, recently from New York, of twelve years' experience as a practitioner, especially interested in the diseases of women and children, and willing to answer calls in city and country. After two years in Winona Dr. Tamblin moved to St. Charles where he operated a drug store with Dr. H. H. Guthrie and carried on a medical practice that extended throughout the countryside to Elba, Utica, and other villages.

Described as at all times an active participant in local politics, Dr. Tamblin was also an energetic member of his profession, progressive and evidently in good standing. In 1869, then in St. Charles, he became a charter member of Winona County Medical Society, and in 1871 he was elected to membership in the Minnesota State Medical Society. At the annual meeting of the state group that year he debated vigorously, opposing the resolution that a committee of three be appointed to obtain from the legislature an appropriation to aid in publishing the transactions of the society (this resolution was passed), and by proposing that the fee for examination for life insurance by members of the society be fixed at not less than three dollars (this resolution was placed on the table). At different times he served as a member of the Committee for Essays on Medical Subjects, the Committee on Medical Societies, and the Committee on Epidemics, Climatology and Hygiene.

In 1882 Dr. Tamblin moved from St. Charles to Lanesboro; by 1885 he was living in Lincoln, Nebraska.

Isaac Whittington Timmons (1883-1912), a member of the homeopathic school of medicine and, after 1887, the possessor of an exemption certificate under the Affidavit Law of the state, was for many years a practicing physician in southern Minnesota. Coming to Minnesota in 1870, he began his medical practice in Money Creek, Houston County, leaving after a few years to settle in Winona, Winona County. By 1877 he had returned to Houston County and was practicing medicine in the village of Houston. In 1881 he went for a time to North La Crosse, Wisconsin, and not long afterward, learning that there was an opening for a physician in Chatfield, Fillmore County, he established himself in that place for a year and a half. A note in the *Chatfield Democrat* of November 3, 1883, stated that he was using the office formerly occupied by Dr. R. W. Twitchell. By the early spring of 1884 he had returned to Winona and there he followed his profession and joined actively in the civic life of the community until his death in 1912. In notes on medical history in Houston County the writer included a detailed sketch of the life of Dr. Timmons.

(To be continued in December issue)

President's Letter

NATIONAL PHYSICIANS' COMMITTEE CALLS CONFERENCE OF THE PROFESSIONS

Recently; it was my privilege to attend the National Conference of the Professions held in Chicago and sponsored by the National Physicians' Committee for the Extension of Medical Service. This meeting was attended by 184 physicians and dentists, and every state in the Union was represented. It was the consensus of all who were fortunate enough to be among those present that this was an epoch-making meeting. Any doubt of the need for the National Physicians' Committee was dispelled during those two memorable days, September 29 and 30, 1947.

During the course of the Conference, vitally important facts were revealed with the utmost clarity. I was profoundly impressed with the vastness of achievement which is possible through co-ordinated effort. Several startling revelations were disclosed. For example, it was demonstrated beyond peradventure that the source of the relentless drive for compulsory sickness insurance—socialized medicine—is the "Moscow-dominated Communist Party of the United States." Also, incontrovertible evidence was provided that statistics compiled by Federal bureaus have been misused or misinterpreted by government employes to create the impression that there is a great lack of adequate health care in this country. And furthermore, it was shown that an inquiry into government records indicated that millions of dollars of public funds have been spent illegally in an effort to create a demand on the part of the people for socialized medicine. I was deeply impressed by the step-by-step method by which the monument of evidence was built. Indisputable facts demonstrated that forces behind the relentless drive for socialized medicine are pressing toward the achievement of their chosen objectives by the use of coercive and deceitful devices.

The Honorable Forest A. Harness* spoke at the evening session. He said: "The amazing ramifications of the Federal propaganda in behalf of socialized medicine have astonished me." He stated too that all the Federally financed activity for socialized medicine originates in the Bureau of Research and Statistics of the Social Security Board. "Our committee investigators," he said, "have found in that Bureau a veritable nerve center of socialized medicine propaganda for the entire world. On the basis of evidence at hand American Communism holds this program as a cardinal point in its objectives . . . and . . . in some instances, known Communists and fellow travelers within the Federal agencies are at work diligently with Federal funds in furtherance of the Moscow party line in this regard."

All during the meeting, the authoritative guest speakers, selected by the National Physicians' Committee, produced facts which indicate that the propaganda of the protagonists of socialized medicine has its source in the Communist party and in a small group of officials of certain Federal agencies charged by Congress with the administration of social and welfare laws. These speakers stated that the Communist party finances its efforts by collecting dues equal to 6 per cent of the wages and salaries of its members and in addition has levied an assessment on all members, equal to one week's earnings. In some instances the assessment was as much as $2,500. Also, it was brought out that bureaucrats in our national government have been dispatched to Tokyo and Manila for the purpose of establishing programs of compulsory sickness insurance in the Philippine Islands and Japan.

I came away from the meeting with a feeling of admiration and esteem for the National Physicians' Committee. This organization has grown in strength and effectiveness until now it is undoubtedly the most important single agency which has for its objective the preservation of our system of private medical practice. Probably, it is the greatest single force in the nation directed toward preserving the entire freedom of enterprise system.

The following quotation which I have taken from an editorial which appeared in the October, 1947, issue of the *North Carolina Medical Journal,* pays fitting tribute:

"It may be recalled that the National Physicians' Committee has been the principal target of abuse for the proponents of socialized medicine, and that over a nationwide radio broadcast this organization was accused of having spent one million dollars for the publication and distribution of one pamphlet. Doctor Edward Carey, appearing before the Murray Committee, refuted this accusation by showing that in six years the National Physicians' Committee had spent only $905,359.23 on all its activities. It is a tribute to the National Physicians' Committee's management that with this sum—paltry by comparison with the $75 million spent by Federal Government agencies in one year—a handful of men have been able to withstand the onslaught of 45,000 employes engaged full or part time in propaganda activities."

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*Chairman of the subcommittee on Publicity and Propaganda of the House Committee on Expenditures of Executive Departments.

If one should seek official approval of the National Physicians' Committee, it can be found in the records of the American Medical Association and other medical organizations. In June, 1947, the House of Delegates of the American Medical Association approved the report of its Committee on Executive Session, a portion of which read: "Among those who were familiar with the organization (N.P.C.), the general impression was that it was just about the only thing that had stood between the medical profession and political control. We recommend that the House of Delegates of the American Medical Association continue its commendation of the accomplishments of the N.P.C. and resolve a vote of confidence in the managing board of that organization."

During the past twenty-five years there have been approximately 100 attempts to enact compulsory sickness insurance laws in Congress and in the state legislatures. An effort was made to enact the most vicious kind of compulsory health insurance legislation during the 1947 session of the Territorial Legislature of the Hawaiian Islands. That this move toward socialized medicine in Hawaii had great national significance becomes clear when one realizes that the territory stands upon the very threshold of statehood. The delegate from Hawaii to the House of Delegates of the American Medical Association made this report at the Centennial meeting: "The pattern-trend in Hawaii has been and continues to be of such nationwide importance that the N.P.C., at the request of the Territorial Association, made its full facilities available to us. All the services which the N.P.C. gave us so generously—literature, analyses of legislation, comparative data, statistics, personal services—were of such tremendous importance in solving our problems that every professional and businessman in Hawaii now fully realizes that this all-physician organization can truly be called the 'shock troops' and the 'winning battalion' in the cause of both professional freedom and the whole freedom of enterprise system when the big push is on. The N.P.C. has earned and truly deserves the financial and moral support of every ethical physician for its long and effective services to the professions."

It has not been my purpose merely to pay tribute to a group of physicians who unselfishly have rendered such yeoman service to the citizens of their country, but in addition I wish to use this story of accomplishment as a stimulus toward even greater achievement. Whenever there has been a grave crisis, these courageous men of the National Physicians' Committee have quickly and effectively moved against the evil forces which would wreck the finest system of health care which the world has ever known. And now, after nearly a decade of service, they face their most important tasks. They must clarify in the public mind the true meaning of the bold and purposeful, the adroit and sinister moves that would result in political control of the distribution of medical care. This can be accomplished only by the highest unity of purpose and co-ordinated effort on the part of the professions. We must recognize the sterling character and performance of our colleagues of the National Physicians' Committee. Only through maximal co-operation and generous support of this great organization by all physicians can the integrity of the medical and dental professions be preserved.

Louis A. Buie

President, Minnesota State Medical Association

Editorial

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CARL B. DRAKE, M.D., *Editor;* GEORGE EARL, M.D., HENRY L. ULRICH, M.D., *Associate Editors*

SOCIALISM OR FREE ENTERPRISE?

WE are intrigued by the American Heritage Program and the Freedom Train, said to have been conceived by Attorney General Clark. Making such historic documents as the Declaration of Independence, the Constitution of the United States, and the Bill of Rights available to the gaze of millions of citizens throughout the forty-eight states cannot fail to have an important educational value. And after all, an informed public opinion determines the kind of laws our representatives pass, and will determine whether we adhere to the form of government which has made our country what it is in freedom and opportunity or whether we shall go all out for Communism or Socialism.

We have had recent examples of how Communism and Socialism work. The Communists advocate the elimination of private property and the employment of all citizens by the state, with equal compensation for all types of work. The members of the Communist party are, of course, to hold the important offices. Human nature being what it is, we see how differently Communism has worked out in Russia. How any patriotic American can consider Communism for a moment is beyond comprehension.

Socialism advocates the wide nationalization of industry by the government, and correspondingly less private industry. England has gone far on the socialistic path under its present labor government. The effect on England's economy does not recommend Socialism for its efficiency according to American standards.

How far we as a nation want to go in the direction of Socialism is for the people to decide—not the government nor elements in the government. If the public realizes that with Socialism comes regimentation, government regulation of wages and prices, and loss of personal freedom, it will make the people pause. If the public learns that socialization of industry in other countries has begun with the socialization of medical care, they will pause before they adopt such legislation as the Wagner-Murray-Dingell bill. Of course, there is the necessity for the government to undertake certain activities for the good of the public. A certain amount of socialization of medical care has been deemed necessary, as evidenced by the governmental care given the insane, the tuberculous, the veterans, et cetera.

To anyone not entirely blind to present-day trends, it must be evident that there is a strong element in Federal government circles working with enthusiasm of zealots for a socialistic form of government in our country.

The Wagner-Murray-Dingell bill, providing for complete socialization of medical care, repeatedly submitted to Congress in a little different form each time, was backed by President Truman on its last submission. And now comes the suggestion that this bill be incorporated as a plank in the Democratic platform. We can conceive of no worse outcome than that such a radical change in government should be subjected to the heat of a political campaign rather than to cool, considered deliberation of Congress.

No more should the Taft-Hartley hospital bill be considered a Republican measure just because a Republican congress passed it!

We have referred editorially to the Health Workshops conceived and promulgated entirely by government employes in the U. S. Public Health Association and other Federal departments. This is a good example of the enthusiasm in certain parts of the Federal government for the complete socialization of medicine.

The government's Health Mission to Tokyo is another example of the fanaticism for Socialism which exists in certain quarters in Washington. The scheme of a Health Mission to Tokyo originated in the Division of Research and Statistics in the Social Security Board in Washington. Federal employes were deliberately sent from Washington to Tokyo for the purpose of engineering a request for a health mission. Is it not significant that the personnel of the mission sent was composed entirely of men long identified as advocates of socialized medicine not only in the United States but throughout the world?

According to Representative Harness, chairman of a Congressional subcommittee investigating publicity and propaganda of the U. S. Government, the real purpose of the Health Mission to Tokyo was to lay the foundation for a system of socialized medicine in Japan. If this is not evidence of a fanaticism for world Socialism, what is it? As Harness said, "I deem it inappropriate for Federal employes, at the expense of the American taxpayer, to travel throughout the world preparing or assisting in the preparation of legislation to be adopted by foreign countries when similar legislation, long pending, has not been approved by the Congress of the United States."

It seems very evident that America stands today at a crossroads. Public opinion must decide whether we are going to continue our socialistic trend, which includes unwarranted competition on the part of the government with private industry, and Federal subsidy of states for activities which each state should sponsor itself, or whether we are going to retrench in our socialistic activities. The recent declaration of Indiana that henceforth she will refuse Federal subsidy and support her own projects without Federal assistance is encouraging and merits emulation by other states.

We are in favor of any activities, such as the American Heritage Program and the Freedom Train, whose purpose is to give the public a clear understanding of the price we have paid for our liberty and the price we shall all have to pay in personal freedom if we substitute Communism or even Socialism for our present economic system. There should be no question of what choice informed and freedom-loving Americans will make.

TYPHOID IN MINNESOTA

In the old days, typhoid fever proved a very substantial source of revenue for the general practitioner—enough patients with typhoid, and Junior's college expenses were assured. Today, many recent medical graduates have never seen a patient with typhoid fever.

In 1910, there were 3,892 cases of typhoid in Minnesota, with 688 deaths. Starvation and ice packs, or tubbing in ice water, formed the standard treatment. Such figures show the disgraceful status of public sanitation in the state at that period. With improvement in water and food supply, by 1920 there were only 684 cases with seventy-one deaths, and by 1930 only 217 cases and twenty-five deaths. For the past ten years the number of yearly cases has been less than 100 with fewer than ten deaths, and with a low of twenty cases in 1945 and no deaths in 1944.

This brilliant reduction in morbidity and mortality from typhoid fever is due to improvement in water supply by the sanitary engineers, the use of pasteurized milk, and the diligent follow-up of sources of infection by the Section of Preventable Diseases of the Minnesota Department of Health as soon as a case is reported. Since 1913 the Health Department has identified a total of 469 typhoid carriers and, what seems quite remarkable, it has at present 206 on the active carrier list.

It is not generally realized that carriers afford the most common source of infection. Individuals who have obtained their infections out of the state are next in frequency, and since 1940 a number of cases have been traced to Mexico.

Five infections with paratyphoid A and thirty with paratyphoid B have occurred among the total of 521 cases reported in the past ten years. The remainder have been straight typhoid infections. Three of the individuals with paratyphoid A and one of those with paratyphoid B contracted the disease in Mexico.

This summer three members of a party of eighteen tourists from Saint Paul contracted typhoid fever in Mexico. Two were classified as typhoid and one as paratyphoid A. One of the typhoid patients had been vaccinated in 1946. The other two patients had never been vaccinated. Nineteen cases of typhoid have been reported so far in 1947, eight persons having contracted the disease from carriers, three in Mexico, and one from elsewhere outside the state.

As far as Minnesota is concerned there have been thirteen cases of typhoid contracted in Mexico since 1940. If other states have had similar experiences, and there is no reason to suppose that most of them have not, attention should be called not only to the desirability of a recent vaccination with triple typhoid vaccine for those planning to visit Mexico but also to the fact that great care should be taken to avoid contaminated food and drink when visiting Mexico.

NOTE: The statistics cited were kindly furnished by the Minnesota State Board of Health.

TOPICAL SULFA N. G.

THAT we were at first carried away by our enthusiasm for sulfa drugs has now become apparent. Sulfa drugs were poured into laparotomy and other wounds to prevent infection in clean ones and to clean up infected ones, were applied in salves to skin lesions or incorporated in lozenges for sore throats, and were used in various and sundry other ways.

One of the contributions made to civilian practice by war experience was the discovery that sulfa drugs actually delay healing of wounds and were actually ineffective for wound sterilization. As a result, the Council on Pharmacy and Chemistry of the AMA has made the following statement on the topical use of sulfa drugs in the 1947 edition of *New and Non-Official Remedies:*

> "Experience gained in World War II seems to indicate that the use of crystalline sulfonamides as topical agents was not very successful in the management of wound infection or in the treatment of infections of the skin and mucous membranes. The routine use of sulfonamides as topical applications in wounds, burns and in superficial infections is, therefore, to be discouraged."

The sulfonamides intended for topical therapy will, therefore, be discontinued in this volume. It may be noted that sulfonamides in hair tonics and shaving creams are useless. They not only render a false security but may cause the development of a cutaneous sensitivity which will in the future prevent the use of sulfonamides in serious conditions for which these drugs are known to be effective.

AMA DIRECTORY INFORMATION CARD

Preparations are being made to publish the new, eighteenth edition of the American Medical Directory! The last edition of the Directory was issued late in 1942.

About November 15, a directory card will be mailed to every physician in the United States, its dependencies, and Canada, requesting information to be used in compiling the new Directory. Physicians receiving an information card should fill it out and return it promptly whether or not any change has occurred in any of the points on which information is requested. It is urged that physicians also fill out the right half of the card, which information will be used exclusively for statistical purposes. Even if a physician has sent in similar information recently he should mail the card promptly to insure the accurate listing of his name and address.

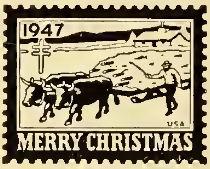
The Directory is one of the most important contributions of the American Medical Association to the work of the medical profession in the United States. In it, as in no other published directory, one may find dependable data concerning physicians, hospitals, medical organizations and activities. It provides full information on medical schools, specialization in the fields of medical practice, memberships in special medical societies, tabulation of medical journals and libraries.

Therefore, should any physician fail to receive one of these Directory Information cards by December 1, he should write at once to the Directory Department, American Medical Association, requesting that a duplicate card be mailed.

TUBERCULOSIS AND CHRISTMAS SEALS

Pioneer days when tuberculosis was "captain of the men of death" and when people suffering with it came "west" to Minnesota seeking health are recalled by the 1947 Christmas Seal. It pictures a team of oxen pulling a sleigh of greens over the snow.

Christmas Seals



. . . Your Protection Against Tuberculosis

An outstanding figure in the pioneer days of Minnesota's fight against tuberculosis was Dr. H. Longstreet Taylor, of Saint Paul, who died in 1932 after a life devoted to the work. Dr. Taylor received his medical degree from the Medical College of Ohio in 1882, the same year that Dr. Robert Koch discovered the tubercle bacillus. His imagination fired by this accomplishment, he said: "It is now possible to drive tuberculosis out of the world." To this task he set himself.

After studying two years with Koch in Germany and two years more in Prague, he practiced medicine in Cincinnati, Ohio, and Asheville, N. C. In 1893 he came to Saint Paul and began his crusade.

Dr. Taylor founded the Minnesota Association for Prevention and Relief of Tuberculosis, the state Christmas Seal organization, now called the Minnesota Public Health Association. Known throughout the United States as the "father of the sanatorium movement" and as an outstanding authority on tuberculosis, in 1927 Dr. Taylor was elected president of the National Tuberculosis Association.

A good picture of the tuberculosis situation at the turn of the century is given in the following abstract from an article written by him in 1893:

> "This is an age when a great deal is being done on all sides to help the unfortunate members of society. . . . Too much praise cannot be given to those who, having wealth, have turned it in part or as an entirety into channels that would bring happiness to other hearthstones, even if, in all this flood of liberality and generous help, one large class of sufferers has been almost entirely overlooked. While many are the recipients of so much charity and attention for ills which they have brought on themselves by their own follies and vices, these unfortunates are suffering from a condition transferred to them from others by the neglect of the state in not putting an end to it, and are themselves spreading it unwittingly right and left, among rich and poor, the high and the low, at such a rate that one individual in seven falls a victim.

"This acquired condition is one, too, which would yield to scientific care and treatment if applied early, but which, once past this borderland of safety, destroys nearly every victim it fastens upon. It is indeed difficult to explain, with all the boasted advantages of the nineteenth century, why such preventable misery should be allowed to grow and flourish. This is all the more surprising in a commercial age, an age that counts the cost and reckons the interest, and finding a profitable balance plunges into the most enormous undertakings and carries them through successfully.

"Such an estimate shows that the state is an annual loser of many millions over and above what it would cost to eradicate this form of suffering and effectually put an end to its future ravages. This plague, which knows no geographical limits and respects no race or condition of man, is tuberculosis, and the unfortunates on whose behalf this plea is issued are the consumptive poor, than whom none appeal to us more strongly for sympathy and help, and although the world has, with a few exceptions, remained deaf to their supplications, yet every motive of charity and selfishness urges us on to do our utmost for them. . . . No steps are being taken by national, state, or municipal governments to prevent the propagation, and very little to rescue the victims of this disease, although science has been proclaiming with increasing emphasis each year of the past decade that the possibility of prevention is beyond question, and that many can be rescued whom the fell destroyer has marked as his prey. In short, if the state did its duty, consumption would be one of the rarest diseases instead of the commonest. Such statements must be sustained by facts, and facts can be produced to prove every one of them."

Progress made since the period pictured by Doctor Taylor is indicated by the fact that the tuberculosis death rate has been cut approximately 80 per cent. Minnesota now has more than 2,000 beds for the care of the tuberculous. Early and unsuspected cases are being searched out in tuberculin testing and mass x-ray surveys. That there is still much to do in the fight against tuberculosis is shown by the facts being stressed in the educational campaign accompanying the Christmas Seal sale. They include the following:

Tuberculosis is still the first cause of death from disease between the ages of fifteen and thirty-five.

It kills 53,000 people in the United States annually—one every 10 minutes. Last year, 596 Minnesotans were victims.

Tuberculosis germs are passed from sick persons to well persons by contact. Early discovery and isolation of spreaders is essential for tuberculosis control.

Sixty-seven per cent of the patients entering Minnesota sanatoria are in the advanced stages of the disease.

Five hundred thousand American have the disease at the present time and only one-half of them know it.

Tuberculosis is curable. Mass chest x-ray surveys find unsuspected cases.

Tuberculosis can be eradicated if we put to full use present-day knowledge and facilities.

The Christmas Seal sale is conducted by some 10,000 volunteer leaders under the direction of the Minnesota Public Health Association, state unit of the National Tuberculosis Association. Ninety-five per cent of the funds raised remain in Minnesota for local and statewide programs, while 5 per cent goes to the National Tuberculosis Association for its medical research and general program of organization and education throughout the nation.

EPIDEMIOLOGY AND RECENT DEVELOPMENTS IN POLIOMYELITIS

(Continued from Page 1148)

precludes the possibility of any effective means of avoiding possible infection. Based upon these facts, the rules and regulations for the control of communicable diseases have brought about a change in attitude towards the isolation of poliomyelitis cases and contacts. Presently but few states isolate patients and contacts.

The only significant statement which a person can make as far as prophylaxis of poliomyelitis is concerned is that up to this time nothing has been found to be effective, and the only encouraging statement which can be made is that clinical and research efforts are ever expanding in the hope of finding some effective ways and means through which preventive measures may be exercised.

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MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

NORTH CENTRAL CONFERENCE MEETS IN SAINT PAUL, NOVEMBER 23

On Sunday, November 23, doctors from Minnesota, Iowa, Nebraska, North and South Dakota and Wisconsin will convene in Saint Paul for their annual North Central Medical Conference.

A panel of speakers will present half-hour discussions on several medical economic problems common to the North Central states. Ample opportunity will be provided for delegates to comment from the floor. Program topics include the physician's role in the total medical care picture, the co-ops, veterans' medical care, rural health, public relations and medical society administration.

Sessions begin at 10 a.m. with the presidential address by Dr. William J. Duncan of Webster, South Dakota, Conference president. Other speakers on the morning program are Drs. Floyd L. Rogers, Lincoln, Nebraska, and Fred Sternagel, West Des Moines, Iowa, and Mr. Thomas A. Hendricks, Secretary of the Council on Medical Service of the American Medical Association.

Educator to Speak at Dinner

A fresh viewpoint on the old problem of ways and means of improving rural health will be presented at the 12:30 p.m. dinner by Dr. John O. Christianson who directs the school of Agriculture of the University of Minnesota Farm Campus. In the afternoon Mr. L. S. Kleinschmidt of the American Medical Association, who has devoted considerable study to the problem of health co-operatives, will speak on whether the co-ops have a place in the voluntary prepayment medical care program. Following this, Dr. W. A. Wright, Williston, North Dakota, will describe that state's plan for veterans' medical care, and Dr. W. D. Stovall, Madison, president of the State Medical Society of Wisconsin, will outline a plan for speeding up administrative processes of state medical organizations. At 3:30 p.m. there will be an open forum at which time conference delegates can bring up specific questions for discussion. Moderator will be Dr. Louis A. Buie, Rochester, president of the Minnesota State Medical Association.

The Conference will close with a brief address by the 1948 president of the Conference, Dr. A. W. Adson, Rochester.

STATE DIVISION REHABILITATES 590 HANDICAPPED PERSONS

An increase during the past year in the number of handicapped civilians who have been rehabilitated has been noted by the Division of Vocational Rehabilitation of the State Board for Vocational Education. In its annual report just published, the division claims 590 cases closed as rehabilitated, an increase of fifty-two over the previous year.

The economic returns of the program are far outweighed by the human benefits derived from these services to the handicapped, the report says. Whereas these 590 rehabilitated persons who have now been able to earn a total of $958,932 and will pay Federal and state taxes in the amount of $97,327.91, the transformation of men and women from dependency into self-sufficiency is a return which cannot be measured in dollars and cents, the report points out.

In addition to those cases actually closed there were 267 other handicapped persons in gainful employment who are now being followed up to determine the suitability of their jobs before closing their cases. This brings the total to 875 disabled persons placed in employment this year.

Earn Good Wages

Based on earning reports secured from these rehabilitated persons, their average weekly wage is $33.18, showing that these disabled persons are not earning a bare subsistence wage. Many have found it possible to increase their earnings; and, looking at the total picture, they are now collectively earning 80 per cent more than they were when they first began working.

The Division of Vocational Rehabilitation can take credit for saving thousands of dollars of public assistance funds which need not be spent when these disabled are rehabilitated to the status of self-supporting wage earners. Its records show that for thirty-five persons a total of $405 a week was being doled out to them when they were first referred to the division for help. Now these same thirty-five are actually earning $959 a week by their own efforts.

It is estimated that of the 195 persons who had no income at all at the time when their cases were first investigated, all are now earning their own way so as to have earned in six weeks what they cost the division.

Over 6,000 Received Services

During the year the total number of disabled cases on the rolls of the division was 6,362, an increase over last year. In preparing disabled persons for their jobs, here are some of the items the division purchased last year: twelve artificial limbs, twelve hearing aids, one pair of glasses, 309 medical examinations, two repairs for appliances and 229 items of training supplies.

During the year the division's medical consultant reviewed 1,153 medical reports to determine eligibility and completeness of information so that adequate programs could be outlined by the counselors. Medical examinations were purchased for 298 new clients; and in addition, 855 medical reports were secured from family physicians, clinics, and hospitals which had records available.

More and more the disabled youth in this state are looking to the division to prepare them for employment. Results are being obtained by co-operation on the part of the division with school people over the state initiating programs to emphasize the abilities of the handicapped youth and minimize their disabilities.

Disabled Need Understanding

The great need for understanding of the disabled on the part of the general public was cited in the division's report. The disabled person must be reached early in the period of disablement, the report said, so that restoration services can be started before he is unduly subjected to the disintegrating effects of idleness. The longer the period between disablement and the start of restoration, the more difficult and costly the latter becomes. Therefore the report urges that all organizations, public and private, should know about these services in order to make prompt referrals.

Services for the seriously disabled or the "homebound" continued to expand during the last year. Their total earnings also increased greatly over the last year. The area served was increased by opening an office in Virginia, serving seven towns on the Iron Range. This expansion was made possible by a grant from the Minnesota Society for Crippled Children and Adults.

Tuberculosis rehabilitation continued to receive considerable attention. In addition many deaf and hard of hearing received assistance under the program.

CONFERENCE STUDIES NATIONAL SCHOOL HEALTH PROGRAM

"Civilization marches forward on the feet of healthy, well-instructed children!" That statement was made in a speech by a Missouri superintendent of schools before a recent national gathering of physicians, educators and public health officials and it summarizes perfectly the present goal of our nation's schools.

The physician's responsibility in the attainment of such a goal was the subject of the conference, which was called by the American Medical Association in an effort to stimulate action, in a spirit of friendly co-operation, among all groups concerned with the health of our school children.

Held at Highland Park, Illinois, October 16 through 18, the gathering was entitled "The Conference on the Co-operation of the Physician in the School Health and Physical Education Program," and the purpose was, in the main, twofold: The three-day meeting was devoted to a thorough examination of what is being done at present to provide for the health and well-being of children in school and to suggesting ways of implementing the rather broad, ideal, national policy within the various states.

Co-operation Is Key

The inspiring talk by the gentleman from the Ozarks, Mr. John Bracken, superintendent of schools in Clayton, Missouri, echoed the sentiments of all of the conference delegates when it placed most emphasis on the need for co-operation on the part of everyone concerned in the school health problem—teachers, administrators, government officials, doctors, nurses and parents.

As the health adviser, the physician, Mr. Bracken declared, is "part of the team that takes care of children." It was the beginning of a new, brighter era in child health, he said, when the physician entered the picture.

Other conference speakers expressed ideas along the same line. In his address of welcome, at the opening of the conference, Dr. George Lull, secretary and general manager of the AMA, emphasized the vital need for the medical profession to work with all groups toward the attainment of better health for all people. It was agreed that the foundations of health are laid in childhood and that the level of the health of people generally cannot be raised effectively without first improving the health of youngsters in school.

Dr. Edward L. Bortz, AMA president, viewed the meeting as one of the most significant arranged by the AMA in a long time. He expressed the hope that it would be the first of a series of such conferences.

"The AMA welcomes constructive criticism," Dr. Bortz declared. "The medical profession is blazing trails in the fight for better health; and through the medium of such conferences as this, with the help of educators and all other groups involved, we can do an even more effective job."

Health Is Important Topic

Health is the number one topic for study in schools, it was pointed out at the conference. For youngsters in their formative years, it was recommended that they be given: (1) full and scientific health information, (2) thorough, periodic health examinations, (3) instruction in the basic facts of healthful living, and (4) a balanced program of mental and physical education.

The need for modernizing the health and physical education program in the nation's schools was cited as particularly important. A new concept of education has developed which recognizes a child as a total personality, and it is important to have a health and physical education program in step with this idea.

Since the conference was called by physicians, discussions centered around what physicians themselves can do in the program. However, it was emphasized that doctors are *not proposing a medical profession's program* for health in the schools, they are merely offering their services in a constructive and co-operative way.

It was not the intent of the meeting to publish as a result of its deliberations a volume of new information on policies and programs to improve school health. It was rather the hope of the delegates to decide upon plans for putting into practice the existing policies and to take these plans back to the various states.

Groundwork Already Laid

Discussions were based on the results of previous discussions and the preliminary groundwork laid by the National Conference for Co-operation in Health Education and its National Committee on School Health Policies. This group formulated in 1945 a set of suggested school health policies, which was admittedly very idealistic. It also compiled an analysis of the functions of the school administrator, the physician and the nurse in the total school health program.

In putting these health policies into effect, the delegates noted that it would be necessary to have an exchange of information between the various states, descriptions of programs in operation for purposes of comparison and evaluation.

The problem of how to evaluate the various programs was also discussed. It was suggested that the United States Office of Education or the AMA Bureau of Health Education might be asked to collect information of this kind for distribution to communities requesting information on how to proceed.

Children themselves should have a share in evaluating these programs, it was pointed out. Children should be encouraged to take a very live interest in the school health program so as to secure their understanding and co-operation.

Conference in Four Sections

For purposes of more detailed study of the problems involved, the Conference was divided into four work sections. The sections were entitled (1) School Health Services, (2) School Health Programs and Studies, (3) The Physician and Physical Education and (4) Pre-Service and In-Service Education.

Experts in the field from the various organizations participating, that is, state departments of education and health, state education associations and state medical associations, led the discussions in each section. The conference was brought to a close with a general meeting at which a report or summary of the discussions carried on by each of the four was read.

A wide range of topics was covered—for example, the problem of too many "excuses" from physical education classes. It was found that this problem has many contributing causes, all of which must be remedied. First of all, there are the parents and children who do not understand the importance of physical education to the total school program, nor do they have any understanding of the role of exercise in body development. Many children dislike physical education because it is not properly taught—the program in their school is not an attractive one.

As regards the doctors who write excuses for these youngsters, they have never been informed about the aims of the school system and consequently they cannot understand its problems.

Role of the Medical Society

Throughout the discussions it was agreed that the state medical associations and the component medical societies can do much to foster co-operation between doctors and educators. It was suggested that joint meetings, perhaps one a year, between the school board and the local medical society might be of real benefit.

At the state level, the medical profession can work for the co-operation of the groups involved. It was suggested that sections at the medical association's annual meeting could be devoted to a study of the problem with nurses, educators and government officials invited to participate. The medical association can also appoint committees or utilize existing committees for the study of school health.

All were in agreement that what is needed is the participation of all groups concerned. If a school health council is formed, for example, it should include representatives from the medical, dental, nursing and allied health professions, as well as teachers, school administrators, parents and students themselves. Since the school health program takes in everything that affects the well-being of children in school, every person who is connected with the school must be enlisted before the program can be a success.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul 2, Minnesota

Julian F. DuBois, M.D., Secretary

Minneapolis Woman Sentenced to Four-year Term for Criminal Abortion

Re State of Minnesota vs. Alida Toivonen

On October 7, 1947, Alida Toivonen, forty-nine years of age, 416 21st Avenue No., Minneapolis, was sentenced to a term of not to exceed four years at hard labor in the Women's Reformatory at Shakopee by the Hon. E. A. Montgomery, Judge of the District Court of Hennepin County. Mrs. Toivonen entered a plea of guilty on that date to an information charging her with the crime of abortion and also to a second information charging her with having a prior conviction of a felony. Following a statement of the facts to the Court by legal counsel for the Minnesota State Board of Medical Examiners, Judge Montgomery stayed the execution of sentence and placed the defendant on probation for a period of four years.

Mrs. Toivonen was arrested on September 17, 1947, by Minneapolis police officers following the admission of an eighteen-year-old married Minneapolis woman to Minneapolis General Hospital. The patient was suffering from an infection following an abortion. She named the defendant as the person who performed the abortion which took place in a room at a Minneapolis hotel. The defendant at first denied the charge, but subsequently admitted that she performed the abortion and was paid $75.00 for her services. Mrs. Toivonen was convicted for a similar offense on February 13, 1945, in the District Court of Hennepin County, and at that time was sentenced to a term of one year in the Minneapolis Workhouse. She served six months of the sentence and was on probation for eighteen months. In the present case the investigation disclosed that Mrs. Toivonen refused to perform the abortion when first requested, but was prevailed upon to do so by the employer of the man responsible for the patient's pregnancy. There was no evidence of any other offense and under those circumstances the Court stayed the execution of sentence.

During the investigation Mrs. Toivonen stated that she was born and raised in Yellow Medicine County, Minnesota, and had worked at a small hospital in Wisconsin as a practical nurse. She also claimed to have taken a correspondence course in nursing. The defendant has resided in Minneapolis for twenty-five years. She holds no license to practice any form of healing in the State of Minnesota.

Two Saint Paul Women Sentenced for Criminal Abortion

Re State of Minnesota vs. Asunda Willner, also known as Sue Willner

Re State of Minnesota vs. Helen A. Heck

On October 9, 1947, Asunda Willner, also known as Sue Willner, thirty-five years of age, 343 W. Central Avenue, Saint Paul, and Helen A. Heck, forty years of age, 799 Iglehart Avenue, Saint Paul, were sentenced by the Hon. Clayton Parks, Judge of the District Court of Ramsey County, Minnesota, to terms of not to exceed four years each in the Women's Reformatory at Shakopee. Both sentences were stayed and the defendants ordered to serve sixty days in the Ramsey County Jail. Each defendant is to be on probation for the balance of the four-year term. Both defendants had entered pleas of guilty on August 21, 1947, to an information charging each with the crime of abortion. At that time, Judge Parks referred the matter to the Probation Officer of Ramsey County, for a pre-sentence investigation.

The defendants, together with one John L. Capra, were arrested by Saint Paul police officers on a complaint filed in the Municipal Court of Saint Paul on August 13, 1947. The complaint charged the defendants with having performed a criminal abortion on a twenty-two-year-old unmarried Saint Paul girl. The abortion was alleged to have been performed on or about July 5, 1947, at the home of the defendant Heck. The patient stated that she paid $350.00 to the defendant Willner and was taken to the Heck home where she was blindfolded and the abortion performed by some person unknown to her. The defendants denied performing the abortion and claimed that it was done by "a Minneapolis doctor." Each of the defendants denied knowing the identity of the doctor. The defendant Heck stated that the person performing the abortion had been to her home previously, but that she knew him only as "Doc." The persons investigating the case place no belief in this part of the defendant Heck's story. The case against the defendant Capra was dismissed on motion of the County Attorney for the reason that the evidence disclosed that his only connection with the case was that he drove the patient from the Heck home where he lived, to the patient's own home.

The defendant Willner has a previous criminal record having entered a plea of guilty on August 8, 1942, in the District Court of Ramsey County to an information charging her with the crime of practicing healing without a basic science certificate. That charge, likewise, grew out of an alleged criminal abortion. For that offense the defendant Willner was given a suspended sentence of one year in the Ramsey County Jail. Neither of the defendants holds any license to practice any form of healing in the State of Minnesota.

THE MAN ON THE STREET

Does industry pay a dollar in dividends for every dollar of wages? A poll on the West Coast showed that The Man on the Street believes that capital gets more than half of what is left after all other costs are paid, and labor less than half. In fact, 72 per cent of the Men on the Street believe this.

Believing it, how do they feel? They feel sore at the American system. They think that it is unfair. And, if true, it would be unfair. If I believed it, I would be a Socialist or a Communist, too. I would say, "To h—— with them. Take it out of their lousy profits."

Men vote as they think. "As a man thinketh in his heart, so is he." If he thinks wrong, he will strike wrong and vote wrong.

How the Man on the Street thinks is more important to business than any other thing whatsoever. The Man on the Street holds every business, from the corner grocery to the giant factory, in the hollow of his hand. The Man on the Street elects Governors, Congressmen, Presidents. As he believes, so he elects.

Well, what is the fact about this matter? Not the "bull," but the truth.

After all other expenses are paid, we have, say, $100 for both labor and capital, wages and dividends. The belief is that capital gets $50 or more, and labor gets $50 or less. Most people think less. That makes them bitter.

Now for the truth. I have gone to two sources, one private, the other the United States Department of Commerce. The private statistical organization is the National Industrial Conference Board. For the year 1939 it reports that of this $100 employes got $84.70 and capital got $15.30. This is nearly $6 to employes and $1 to capital. But bear in mind that nearly 60 per cent of all business companies did not make any profits whatever for capital that year.

That was the figure for 1939. So I took the question up with the Department of Commerce. In their Survey of Current Business for January, 1946, they give the division for all corporations for the year of 1944. It shows that after taking out the taxes paid to government "the ratio was almost seven to one." That is $7 to employes and $1 to capital.

This is a far cry from fifty-fifty, or more than 50 per cent to capital and less than 50 per cent to employes. The truth is about $87.50 to employes and $12.50 to capital. Of course, the ratio varies in one industry from another, but this is the U. S. Government average for all corporate business.

Now is 6 to 1, or 7 to 1 a fair division? Here is Mr. Investor. He puts in, on the average, $6,000 in tools, buildings, et cetera, for every man employed. If the business fails he loses his dough. He takes that risk. If it succeeds he gets $1, while the man who uses his machinery gets $6 or $7.

For reasons I haven't room for here, I believe Mr. Worker would shake hands with Mr. Investor on the division and say, "Fair enough, let's go to work."

But Mr. Worker has to know the truth about the split, the whole truth, nothing under the table, and believe it. If he doesn't know it and doesn't believe it, he is ready for the hammer and sickle instead of the Stars and Stripes.

Whose business is it to get the truth to him? It is the business of honest labor leaders themselves—rather than to whip up envy and hate with fake figures.

But it is primarily the business of businessmen. In this, most of them have fallen down on the job. They wait until there is a strike and then when feeling runs warm they try at the eleventh hour, in big full-page ads, to tell a little of the story.

The only thing that makes me an optimist about the American system—and its chance to survive—is that it is, in truth and fact, an incomparably better and fairer system than the picture of it which a lot of dumb businessmen allow to persist in the minds of the public. But, by their indifference and inaction, they are taking an awful chance for their stockholders, workers and the country's heritage of free institutions.—S. B. PETTENGILL, National Radio Commentator and Newspaper Columnist.

Minnesota Academy of Medicine

Meeting of April 9, 1947

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, April 9, 1947. Dinner was served at 7 o'clock and the meeting was called to order by the president, Dr. E. M. Hammes, at 8:10 p.m.

There were sixty-three members and four guests present.

The secretary read a letter from Dr. Giffin expressing his appreciation of his election to Honorary Membership.

The secretary also read a letter from Dr. Diehl suggesting that Dr. J. C. McKinley's name be transferred from the University to the Honorary Membership list. This was voted unanimously, the Executive Committee having approved the transfer.

Upon ballot the following were elected as candidates for membership in the Minneapolis group: Drs. E. D. Anderson and Erling Platou. There were no vacancies in the Saint Paul membership list.

The scientific program followed. Dr. Charles W. Mayo, Rochester, read his Inaugural Thesis which was illustrated with lantern slides.

THE SURGICAL TREATMENT OF CARCINOMA OF THE RIGHT PART OF THE COLON

CHARLES W. MAYO, M.D.
Rochester, Minnesota

It is possible that the public gradually is becoming alert to the various manifestations of malignant disease, and therefore, in the presence of symptoms, is seeking the aid of the physician earlier than in previous years, but such is not known definitely to be true. It is heartening, nonetheless, to observe that between 1907 and 1938, inclusive, the resectability rate of malignant lesions of the colon in one large series which I studied was 67 per cent; whereas in another series between 1940 and 1946, inclusive, which I studied, the resectability rate was increased to 77 per cent.

A number of factors are responsible for the general improvement thus implied. The physician, for one thing, is becoming more and more impressed with the necessity for suspicion and investigation of the colon when a patient complains of fatigability and weakness and when anemia is found to be present. For another thing, the physician is now quick to realize that any digestive disturbance which is persistent and is associated with an alteration in intestinal habit calls for roentgenologic study of the colon.

It is still true, however, that earlier diagnosis is of paramount importance in the successful surgical treatment of malignant processes of the right portion of the colon. Improvement in the end results of such treatment is based on the fact that surgical intervention must be carried out before the malignant process has developed to such an extent as to limit the value of resection.

In the present paper I wish to present what I believe are significant data, gained from a recent review of cases, concerning malignant lesions of the right part of the colon. In addition, I shall describe a method of resection and of end-to-end ileotransverse colostomy, carried out in one stage, which has proved to be of considerable value.

Definitions of Structure Concerned

The term, "right portion of the colon," probably is ambiguous from the anatomic standpoint. Some writers have said that the abdominal portion of the colon is composed of two main parts, the right and the left, which would imply that the line of demarcation is in the middle of the transverse colon. When statistical material pertaining to the colon is under consideration, it is important to know exactly what a speaker or writer means when he concerns himself with this structure. In the present paper, as in past considerations of the right portion of the colon, I shall include the cecum, ascending colon and hepatic flexure only.

Diagnostic Aids and Differential Points

Despite the advances in diagnostic procedures of recent years, it is still uncommon, in the presence of early lesions, to discover definite signs or symptoms to direct the physician's attention to the right part of the colon. It is still true, unfortunately, that when the diagnosis is made early, it generally is done so accidentally. A majority of patients (about 67 per cent) will have experienced symptoms for six months to more than a year before a correct diagnosis is made.

Many malignant lesions in this portion of the colon ulcerate as they progress. Some have a large surface area, a fact which explains the oozing of blood and the development of secondary anemia so often encountered and too frequently mistakenly treated as primary anemia.

Another diagnosis sometimes made for patients who really have a malignant lesion of this part of the colon is "acute" or "subacute appendicitis." In one study it became apparent that 15 per cent of the patients concerned had undergone appendectomy within the period in which symptoms caused by the malignant lesion had been present. This actually is an important consideration. When it is linked to the fact that only about 2 per cent of carcinomas of the right part of the colon develop among persons less than thirty years old, then it becomes clear that any incision for appendectomy should be adequate to permit surgical exploration of the right part of the colon.

Clear-cut symptoms of obstruction are not prominent. A marked degree of obstruction is rare because of the

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From the Division of Surgery, Mayo Clinic, Rochester, Minnesota.
Inaugural thesis.

fluid nature of the intestinal contents on the right side and because constricting or napkin-ring lesions are unusual in this portion of the colon. Even so, a mass can be palpated in about 75 per cent of the cases.

If the lesion is to be detected before surgical operation, roentgenologic examination is essential. It should be done by one who understands roentgenoscopy. Double contrast roentgenography should be employed; in such a procedure the second roentgenogram is made with the colon inflated with air, after the barium has been expelled. Once it has been demonstrated that a malignant lesion is present, the situation becomes an emergency. Hence, no time should be lost in preparing the patient for surgical intervention unless operation is otherwise contraindicated. Time is of prime importance in the treatment of all malignant processes.

In view of present-day knowledge, the problem of diagnosis might be summarized by the statement that if digestive disturbances have been present, or a change in intestinal habit has persisted, in a patient who is more than thirty years old, and if the stomach, duodenum and gall bladder have been ruled out as seats of the disturbance, then investigation of the right part of the colon certainly is indicated.

Preparation of the Patient

The preparation of most patients for operations on the colon requires about four days. Secondary anemia, if it is present, may have to be corrected. The group to which the patient's blood belongs and the Rh factor should be determined, because blood should be transfused in all cases, during or immediately after operation, when resection is performed.

As a rule, one of the sulfonamide drugs is employed in the preparation of the colon for operation. I consider sulfathalidine to be the drug of choice at present for the preparation of patients for resection of the right portion of the colon. This drug is administered by mouth in a dose of 1.5 gm. every four hours, until the patient has received 36 gm. Paregoric should be administered in doses of 8 c.c. at 2, 6 and 10 o'clock of the afternoon and evening before operation, in order to put the bowel at rest.

Surgical Procedures in General

It is a commonplace observation, but one which is still true, that the anesthetic agent of choice is the one with which the anesthetist is most familiar.

Surgical techniques.—Resection of the right portion of the colon can be carried out by a number of methods; any one of the methods encompasses still more differences of detail in performance. Again, every surgeon entertains certain preferences or antipathies toward various types of technique, suture material and suturing procedures, and surgical instruments. Hence, I believe it will be useful for me to consider the surgical trends, and to present only one surgical procedure which has been of value to me, namely, primary resection and end-to-end ileotransverse colostomy.

A number of years ago a colleague and I reviewed all the cases in which resection of the right portion of the colon for malignant lesions had been performed at the Mayo Clinic from 1907 to 1938, inclusive.[1] The series comprised 885 cases. I have just completed, with the assistance of the Division of Biometry and Medical Statistics, another review of cases in which resection was performed at the clinic from 1940 through 1946. Results of the latter study indicate that the following changes have evolved.

First, as I mentioned earlier herein, the resectability rate has increased from 67 to 77 per cent, so far as the Mayo Clinic series are concerned.

Second, primary resection and ileotransverse colostomy carried out in one stage have superseded two-stage and multiple-stage operations. In the past six years, 73 per cent of operations for the condition in question have been one-stage procedures.

Third, in 38 per cent of the one-stage operations, the particular procedures used have been primary resection and end-to-end ileotransverse colostomy.

Fourth, in 1946, resection of the right portion of the colon was carried out for malignant lesions in ninety cases, with no deaths in the hospital. In only three of these ninety cases was the operation done in two stages, and extraperitoneal resection was not performed.

Fifth, although a comparison of mortality rates between the period from 1907 to 1938 and the period from 1940 to 1946 is not a fair one, it is interpolated herein merely to emphasize the progress that has been made. From 1907 to 1938 the mortality rate associated with one-stage procedures was 22 per cent; for two-stage procedures it was 29 per cent. From 1940 to 1946 one-stage procedures were performed with a mortality rate of 3 per cent, and two-stage procedures were carried out with a mortality rate of 6 per cent.

Primary Resection and End-to-End Ileotransverse Colostomy

To the time of this report, on my surgical service, one-stage resection and end-to-end ileotransverse colostomy have been accomplished fifty-four times, with one death. The two procedures at present constitute my operation of choice for malignant lesions of the right part of the colon.

I make a longitudinal incision at the outer border of the right rectus abdominis muscle through the rectus sheath. The rectus abdominis muscle is retracted medially and the posterior fascia and the peritoneum are incised.

After exploration for metastasis or other complicating factors has been completed, the right portion of the colon, beginning with the cecum, is mobilized. A wide segment of the mesentery of the colon is resected and the vessels are ligated deep.

The points for transection of the transverse colon and the ileum are selected with special consideration of the blood supply and the distance of these points from the lesion. I transect the ileum at an angle in order to insure a good blood supply to the cut edge and an adequate lumen to fit the colon. I have not yet encountered a case in which the ileum, cut in this manner, could not be made to fit the transected end of the transverse colon. I cut the colon and the ileum with the cold scalpel. I do not use cautery because I believe that the heat involved devitalizes the tissue.

I do not, moreover, employ crushing clamps at the site of anastomosis. I establish an open type of anastomosis in which rubber-covered clamps are utilized to minimize soiling. Whatever questionable loss may be caused by some degree of soiling is more than compensated for by the accuracy with which sutures can be placed when the open method of anastomosis is used.

An outer row of running cotton suture is placed half way around the serosa. The mucosa is closed with a running catgut suture. The remaining half of the serosal coat is closed with interrupted cotton sutures. Only two rows of suture material are used because it is felt that more would interfere unnecessarily with healing.

The mesentery of the ileum and the mesentery of the transverse colon are brought together and closed in order to keep the small bowel from slipping through this opening. The raw surface on the right from which the colon has been removed is peritonized after retroperitoneal drainage has been established by the placing of two Penrose drains in position and bringing them out through a small incision in the right flank. Next, the region of the anastomosis is thoroughly swabbed with an antiseptic agent (phemerol); before the incision is closed 5 gm. of sulfonamide powder is sprinkled on the area intraperitoneally.

It is advisable, after the abdominal incision has been closed and before the patient has recovered consciousness, to dilate the anus manually enough to paralyze the sphincters temporarily, so that gas cannot be retained. This procedure, I feel, is a very important part of the operation.

Except in one or two instances, it has not been necessary to employ a Miller-Abbott tube preoperatively. Thus far I have not found it necessary to use this tube postoperatively for any of the patients on my service.

Patients are permitted to walk early. Most of them are dismissed from the hospital in less than two weeks.

Outlook for the Patient

What the outcome will be for the patient operated on for malignant lesions of the right portion of the colon is an interesting problem in itself. The surgeon's objective is, of course, to maintain a good result over the years after operation, so that the patient will be assured of a happy and productive existence.

A number of factors determine the outcome after the operation in question. The pathologic grade of the lesion, the mural penetration of the malignant cells, the extent of metastasis to adjacent and distant points, and, of course, the age of the individual patient, all are important factors.

Some definite data are at hand, however. That is, if the patients in the present series are divided into two groups—those who did not have nodal involvement and those who did have nodal involvement, regardless of other factors—the certain five-year survival rates appear to be valid. Sixty-four per cent of those patients who did not have involvement of lymph nodes lived five years or longer; 47 per cent of those who did have such involvement lived five years or longer. A recent study of malignant lesions of the rectum for which one-stage combined abdominoperineal resection was performed revealed that, when involvement of lymph nodes was not present, 74 per cent of the patients lived five years or longer, but that when involvement of lymph nodes was present, 38 per cent of the patients lived five years or longer.

Conclusions

One-stage resection of the right portion of the colon can be performed with a lower mortality rate and lower morbidity rate than can multiple-stage procedures.

With certain rare exceptions, one-stage resection can be carried out in any case in which it is possible to do a multiple-stage procedure.

One-stage resection of the right portion of the colon, with end-to-end ileotransverse colostomy, constitutes an operation that has given very valuable results.

Reference

1. Mayo, C. W., and Lovelace, W. R., II: Malignant lesions of the cecum and ascending colon. Tr. West. S. A., (1939) 49:378-425, 1940; (Abstr.) Surg., Gynec. & Obst., 72:698-706, (April) 1941.

Discussion

Dr. O. H. Wangensteen, University of Minnesota: Dr. Mayo's discussion of the management of lesions of the right colon was most interesting and instructive. The results of the period prior to 1938 from his own clinic, and those achieved since that time, are representative of the improvement in surgery that is occurring everywhere. The surgery of the gastrointestinal canal has been static for a generation; it is reassuring, indeed, to note that through the agency of some improvement here and some there with the problem of intestinal anastomosis how much better the mortality score is. The primary anastomosis, which Dr. Mayo employs with such satisfactory results in the management of lesions of the right colon, antedated the exteriorization operation for dealing with colic cancers. As a matter of fact, now that surgery is ready for the primary anastomosis, I feel it is time to exteriorize the exteriorization operation throughout the colon. For several years now, my associates and I at the University Hospitals routinely have performed primary anastomoses for all colic lesions, in the absence of acute obstruction, without the aid of complemental external decompressive vents, save the indwelling duodenal tube.

It is difficult to assay all the items that have contributed to betterment of the surgeon's mortality record in dealing with cancer of the colon. Certainly elimination of the element of speed has been important, and the principal occurrence that has made it possible to operate without speed is improved anesthesia. It is no longer necessary to rush through an operation to get the patient off the table alive. Much surgery of the past generation had to be done that way. If there are any surgical adherents to that "get in quick and out quicker" policy still around, no matter how pleased they may be with their own achievement, they will be startled, indeed, to learn how their own accomplishment may be improved upon by elimination of the element of hurry.

Better preoperative preparation and improved postoperative care, too, have played important roles in the reduction of surgical mortality. Moreover, today, operations, because of these improvements, can be extended to borderline surgical risks as well as older patients, with risks that are not far out of line from the standard surgical risk.

Dr. Mayo employs the open anastomosis. I will not quarrel with anyone whose total hospital mortality is only slightly more than 3 per cent for a large series of cases. The main thing is to get as satisfactory immediate and as good late results as can be achieved. We can all agree on this. My associates and I use the closed anastomosis exclusively from the stomach to the rectum. Moreover, the best results we have achieved with resection of the colon occurred in the two-year interval from 1941 to 1943. During this pre-antibiotic era, as far as intestinal antisepsis is concerned, we did sixty-one consecutive colic resections from the cecum to and including the rectosigmoid with one hospital death—a mortality of 1.6 per cent. We have not duplicated that performance since. In the series of colic resections done in the next two-year interval, we had three unavoidable deaths—a streak of bad luck that would mar any operative record. But any surgeon who is operating upon patients for malignancy in the upper age bracket must be prepared to lose patients now and then through the agency of coronary or cerebral thrombosis. In other words, having no unavoidable deaths in that first series of sixty-one cases, we did use up a lot of "surgical luck."

My feeling is that the most important item in the procedure is a nice, closed anastomosis made without spillage. Moreover, my associates and I are now making such anastomoses with a single row of sutures, thus assuring ourselves of large, patulous, functional stomas. I think it goes without saying, if one is committed to open anastomoses, he is dependent upon antibiotics to suppress growth of intestinal bacteria to lessen the hazard of peritoneal contamination. Drs. Ravdin and Zintel of Philadelphia recently have reported a comparative study of the efficacy of succinylsulphathiazole and streptomycin in controlling B. coli in the feces. They gave each drug for a period of eight days prior to operation. Streptomycin was given in 0.25 gram doses every four hours. B. coli counts in the range of 400,000 per gram of feces was usual after succinylsulphathiazole; after streptomycin had been administered by mouth for eight days, B. coli counts fell to about 400 organisms per gram of feces. It would appear, therefore, that streptomycin is about 1,000 times as effective as succinylsulphathiazole in reducing the B. coli count in the feces.

There is another phase of Dr. Mayo's presentation that was very interesting—the diagnosis of cancer of the colon. As you will remember, Dr. Mayo dwelt at length upon the circumstance that the stage of development of the cancer had much to do with the ultimate fate of the patient after recovery from operation. If we were to look at the problem of diagnosis of internal cancer from a realistic point of view, it must be conceded that early recognition of gastric or colic cancer is unusual. Even rectal cancer in reach of the examiner's finger is not diagnosed early! In other words, internal cancer is a *silent disease*. If is my feeling that, if we are to make a greater impact upon this problem, we should be setting up cancer detection clinics where patients may report periodically for examination even in the absence of symptoms. Cancer is a frequent disease. One out of every five women past forty and one out of every six men past fifty will die of cancer. It is just a question of who will have it, in what organ and when. The public would like to have from us a *cancer preventive or a cancer cure*. These are not available nor does there appear to be any likelihood that they soon will be. What we need most now to help us with the detection of cancer is a biologic test. That also is not available. The best substitute until a more universally applicable and helpful diagnostic agent is found, would appear to be to urge the erection and strategic placement of cancer detection clinics. The worth of such clinics in the earlier detection of cancer, I believe, can readily be assayed in a few pilot plants. Surgery has made great strides in the management of cancer. Our lament, however, is that, so many patients come so late. Employing only the knowledge we now have concerning the diagnosis of cancer, recognizing at the same time that cancer is essentially a *silent disease,* just as great strides in the management of cancer can be made in the next decade through diagnosis, if we will only implement that knowledge to the best of our ability. The public looks to us for helpful guidance. Here is an opportunity to lend real impetus to the management of the cancer problem in our own generation. The surgery of today makes it possible for patients having cancer to undergo serious and difficult operations at low risks. If such patients are to be offered better chances of permanent cure, earlier diagnosis is our only hope.

Dr. James Johnson, Minneapolis: I certainly want to commend Dr. Mayo for the careful and exhaustive way in which he has handled this particular subject. It is interesting to see the mortality rate improvement over a period of years. This, as has been pointed out, is no doubt due not so much to the improvement in surgical technique as to other measures such as the developments in anesthesia, decompression of the obstructed intestine, and the control of infections.

Only on two occasions, and they were before the introduction of intestinal decompression, have I employed the two-stage operation. It is very unsatisfactory in this locality because of the great loss of fluid. Its purpose was chiefly to relieve the obstruction. Since this can now be eliminated by intestinal decompression, and the general condition of the patient controlled by transfusions and like measures, I see no occasion to do anything but a one-stage operation. I do not believe it matters much whether an end-to-end, an end-to-side, or side-to-side anastomosis is done. Personally, I have for many years used an end-to-end or end-to-side anastomosis by means of a Murphy button. I suppose my early training has led me to employ this method.

I would like to ask Dr. Mayo one question. During the years I have operated upon two inflammatory lesions of the cecum that I mistook for cancer. They in all respects resembled cancer so I had to play safe and resect them. I know of no certain way to differentiate them from cancer. I would like to know what Dr. Mayo's experience has been with these lesions.

Dr. A. W. Ide, Saint Paul: I have enjoyed hearing Dr. Mayo's paper and the discussion. The subject of surgery of the colon has interested me for a long time. The results described by Dr. Mayo are certainly gratifying.

I am particularly impressed with the great improvement that has been made in recent years in anesthetics. This, no doubt, is in a considerable measure responsible for improved results. I am reminded of a remark made by our old friend, the late Arnold Schwyzer, shortly before his death. He said that if he could have had modern anesthetics during his active surgical life he would have been a much younger man.

Dr. Robert Earl, Saint Paul: I have nothing special to add. I want to thank Dr. Mayo for his thesis. I have done a number of these cases with side-to-side anastomosis. I started with that method, have found it very satisfactory, so have been following that technique since.

Dr. Mayo (in closing): I have appreciated the discussions. I can only say that I came back from service in the army and found that the mortality rate in colon surgery was lower by quite a bit than it was when I went away. I don't know where to give the credit, whether it was because I had been away, the surgery was being done better, or it was due to antibiotics. I still don't know.

Every surgeon has his pet method and his pet way of doing things. I do not want to appear to be discrediting any other method; it is simply that I have adopted this particular procedure and have had good results, and I thought they were worth bringing to your attention. One point that I wish to mention here is that there are many factors, aside from the surgical procedure, which are helpful in bringing about a good result, and among them are the expertness with which the anesthetic is given and the administration of transfusions. Regarding the latter, if one thinks that a patient does not need a transfusion, I believe that it is well to give one anyway; if one thinks that one is indicated, I think it is well to give two or three. The use of oxygen postoperatively also has been a contributing factor in a smooth convalescence.

As far as granulomas are concerned, I appreciate that situation. I have a patient on whom I operated in 1938. He returned to the clinic in 1946 and I found he had multiple abscesses. I drained the abscesses and later resected about three feet of bowel. These cases certainly present a problem. It seems to me that one seldom is able to find out what the etiology is. I would much rather resect a right colon for malignancy than for granuloma.

There is one group of cases in which I believe there is a chance of error from the standpoint of the nature of primary lesions. That is in cases in which palliative ileocolostomy is performed for lesions of the right portion of the colon. We have found that in a percentage of these cases the patients have lived three or five years, or longer, after the surgical procedure which, it was thought, had been performed for a malignant lesion. This is a group in which I am interested at present.

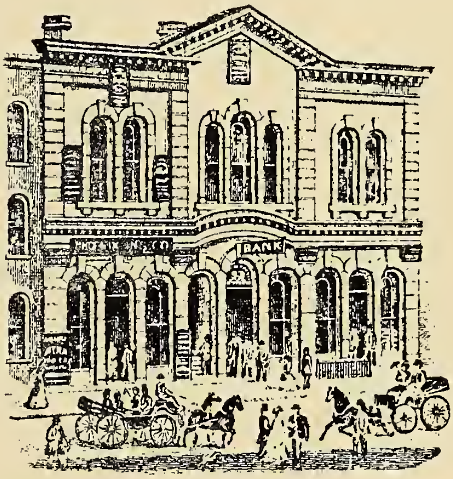
The meeting adjourned.

A. E. Cardle, M.D., *Secretary*

HEALTH DEPARTMENT SEVENTY-FIVE YEARS OLD

This year the Minnesota Department of Health celebrates its seventy-fifth anniversary. The Minnesota State Board of Health was created March 4, 1872, with Dr. Charles N. Hewitt of Red Wing as its executive secretary.

Although Minnesota is comparatively young in statehood, it has one of the oldest health departments in the nation. Only Massachusetts, California, the District of Columbia, and Virginia were ahead of Minnesota in establishing boards of health. The District of Columbia is of course not a state, and Virginia's health department was set up less than a month before Minnesota's, so it may be said that Minnesota ties for third place in the creation of a state department of health.



First home of the Minnesota Department of Health
Keystone Building, Red Wing

The state has another remarkable record in the fact that during its seventy-five years of existence, it has had only four health officers, Dr. Hewitt, Dr. Henry M. Bracken, Dr. Charles E. Smith, and Dr. A. J. Chesley, the present executive officer. Dr. Chesley has been state health officer since 1921, a period of more than a quarter of a century, and has spent his entire professional life in the health department.

To celebrate the 75th anniversary of the State Department of Health and to honor many of its old board and staff members, the Minnesota Public Health Conference held a banquet at the Radisson Hotel in Minneapolis at 6:30 on the evening of Friday, November 14.

MINNESOTA STATE MEDICAL ASSOCIATION

House of Delegates

Summary of Proceedings

Duluth Session — June 29-30, 1947

In accordance with action by the Council of the Minnesota State Medical Association taken in 1944, publication of the proceedings of the House of Delegates is limited to summary.

First Meeting, Sunday, June 29, 1947

Ballroom, Hotel Duluth
Duluth, Minnesota

The Ninety-fourth Annual Session of the House of Delegates of the Minnesota State Medical Association convened in the Ballroom of the Hotel Duluth, Duluth, Minnesota, at 2 p. m., Dr. W. A. Coventry, Duluth, Speaker of the House of Delegates, presiding.

Dr. Coventry called the meeting to order and asked for a report from the Credentials Committee. Dr. A. G. Liedloff, Mankato, reported that a quorum was present. After approval of the minutes of the previous session of the House, Dr. Coventry noted the presence of a distinguished visitor, Dr. George F. Lull, Secretary and General Manager of the American Medical Association.

Dr. Lull addressed the assembly briefly, saying that he was on his way back from a meeting of the Canadian Medical Association, where he had noted that the problems facing organized medicine in Canada are much the same as those facing doctors in the United States. He also reported on the expanding activities of the American Medical Association and mentioned plans for developing regional meetings of the Council on Medical Service and the Council on Industrial Health.

Dr. Coventry then called upon Dr. F. J. Elias, Duluth, for the report of the Chairman of the Council.

Report of the Council

Dr. Elias: The first meeting of the Council in connection with the Annual Session was held at 2 p.m., Saturday, June 28, 1947, for the transaction of routine business. The Council approved the minutes of the previous meetings. Financial reports were submitted and accepted.

The following applications for affiliate membership accepted and approved: A. E. Booth, Minneapolis; J. H. Haines, Stillwater; H. L. Zlatovski, Duluth; A. H. Brown, Pipestone; J. S. Kilbride, Worthington; Allen Sather, Fosston; and C. M. Gambill, Rochester. Affiliate membership also approved for fifteen medical officers, former members of Hennepin County Medical Society and now taking postgraduate professional training. Life membership was granted to the following: C. P. Aling, W. H. Aurand, J. F. Hendrickson, M. J. Jensen, J. C. Litzenberg, A. E. MacDonald, H. W. Noth, O. A. Olson, J. R. Peterson, G. H. Thomas, and J. A. Prim, Minneapolis; G. A. Dahl, Mankato; C. L. Scofield, Benson; Charles Bolsta, Ortonville; and W. F. C. Heise and C. P. Robbins, Winona. Associate membership was granted to K. G. Wakim, Rochester.

Resignation of Richard M. Hewitt as Chairman of the Editorial Committee was accepted with regret and C. M. Gambill of Rochester was suggested to replace him.

The Council went on record as approving the Sickness Benefit Plan under the Railroad Unemployment Insurance Act. It was recommended that the Chairman later give a report to the House of Delegates on the plan which goes into effect July 1, 1947.

Mr. A. R. Hustad, Twin City Manager of the Northwestern National Life Insurance Company, presented a proposal for group life insurance for active members of the Minnesota State Medical Association. It was decided that representatives of the company should appear before the House of Delegates to explain the plan.

A merger of the Watonwan County Medical Society with the Redwood-Brown County Medical Society was approved. Thomas E. Broadie, Saint Paul, was appointed to the advisory board for registration of hospital superintendents.

The second meeting of the Council took place at 6:30 p. m. Saturday, June 28, with the first order of business the consideration of a panel of ten psychiatrists, from which five might be selected to serve as an advisory committee to the Minnesota Mental Health Unit in the Division of Social Welfare. The following names were recommended: F. J. Braceland and M. C. Petersen, Rochester; S. A. Challman, A. G. Dumas and D. W. Hastings, Minneapolis; W. P. Gardner and E. M. Hammes, St. Paul; G. H. Freeman, St. Peter; W. L. Patterson, Fergus Falls; and L. R. Gowan, Duluth. A request from the Director of Social Welfare for approval of the organization of outpatient clinics in the seven state mental hospitals was granted.

The name of Albert Fritsche, New Ulm, was presented in answer to a request from the Practical Nurses' Association that the Council recommend a physician to serve on its advisory board.

P. F. Eckman, Duluth, and B. C. Ford, Marshall, were recommended as candidates for appointment as a physician representative on the State Board of Examiners of Nurses, provided for under the act for the licensure of practical nurses. One will be chosen from these two.

Acting on a letter from the American Medical Association, the Council suggested that Dr. Louis A. Buie, President of the Minnesota State Medical Association and member of the National Committee on Physical Fitness, represent the Association at a conference on the co-operation of physicians in the school health and physical education program to be held October 16-18 in Chicago and that a member of the State Office staff also attend.

After considering a request from a sub-committee of the Committee on Tuberculosis that the Council approve a proposed bill for the commitment of persons suspected of being in the infectious stage of tuberculosis, it was generally agreed that the law as stated needed strengthening and that the matter should be placed on the Fall Council agenda, at which time a member of the Committee should be invited to explain the law in detail.

The Council approved decisions of the Committee on Ophthalmology with regard to the establishment of a fee schedule so as to be eligible for federal funds under the program of the Division of Social Welfare services for the blind.

Action taken by the Board of Directors of the Hennepin County Medical Society with regard to the establishment of a Cancer Detection Center at the University of Minnesota was reviewed. It was decided that Dr. Wells and the Cancer Committee be invited to appear before the Council on Tuesday morning to explain the program further.

The third session of the Council was held at 8 a. m. Sunday, June 29, at Hotel Duluth, called for the purpose of discussing the rural health program. Dr. Paul C. Leck, Austin, Chairman of the Committee on Rural Medical Service, presented a proposal originating from the Second Annual Conference on Rural Health, sponsored by the American Medical Association, for the organization of local health councils throughout the state on a county, trade area or councilor district basis.

Permission was granted to Dr. Leck and his Committee to hold two experimental meetings with allied health professions to determine what methods should be used to interest the lay public in an educational program. One meeting was suggested for the southern part of the state and another for the northern part of the state. Dr. Leck was asked to report back to the Council at a future meeting. The councilors expressed willingness to meet with members of the Committee on Rural Health and assist in the planning of these experimental meetings. After the results of the two meetings have been determined, the organization of local health councils throughout the state could be considered, with an invitation to participate extended to all interested lay groups.

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Dr. Elias next summarized the program for sickness benefits for railroad employees under terms of the Railroad Unemployment Insurance Act, as it was presented to the Council by members of the Railroad Retirement Board. (An explanation of the program will be found in the August, 1947, issue of MINNESOTA MEDICINE, page 883.)

Speaker Coventry next called upon Dr. R. L. J. Kennedy, Rochester, for the report of the Finance Committee.

Report of Finance Committee

DR. KENNEDY: Due entirely to the extremely wise judgment exercised by the preceding Finance Committee, the financial status of the Minnesota State Medical Association has weathered the increase in costs of materials and services and the marked deterioration in the investment market with a slight net increase in its worth. This is extremely gratifying, and more so when you recall that the Association undertook additional financial obligations to carry its members through the war period as well as other projects that necessitated financial support. Too much cannot be said for the wisdom and good judgment exercised by the administrative officers in maintaining the sound economic position of the Association. The investment portfolio of the Association has continued to receive close scrutiny by auditors and advisors in finance and the latest evaluation by them on the position of the Association is favorable. The system of checks and balances exercised by the House of Delegates and the Council has continued to prove effective.

With the return to active practice of many of our colleagues, continued steady progress in the affairs of the Association can be expected.

Two major undertakings financed by the Association were, first, the organization of the prepayment medical service plan, and of the Veterans Medical Service Division. The functions of the organization committees have been completed, as have the details pertaining to personnel and administrative offices. The work of the Veterans Medical Service Division has been inaugurated and the method of repayment of funds borrowed from the Association has been worked out.

Experience of the past year has emphasized the need for retaining strong reserve positions in order that the successive projects undertaken by the Association which demand financial support will not be jeopardized and, on the other hand, the assumption of responsibilities in connection with the furtherance of such projects will not weaken the financial structure of the Association.

While this may be considered a favorable report in that it indicates that the Association has been able to maintain its own even keel, it would be evidence of extreme shortsightedness were it presented without reference to present financial trends. Continuation of the present high market for help and materials will undoubtedly have an adverse effect upon the finances of the Association. If, in addition to this, a marked or even a moderate recession develops, the financial condition may well be crippled. The Finance Committee has been cognizant of the trends of affairs and has been working with its advisers in an effort to fortify itself against unfavorable developments. Every member should be cognizant of these facts and should hold himself ready to support the Finance Committee and other duly elected officers and to protect them from conditions beyond their control.

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In connection with a matter referred to in the Chairman of the Council's report, the Delegates next heard a report from Mr. Arthur Hustad of the Northwestern National Life Insurance Company in which he outlined the plan for providing life insurance to active members of the Minnesota State Medical Association on a group basis.

Following Mr. Hustad's report, it was moved and seconded that Speaker Coventry appoint a committee of three physicians to work out details of the Life Insurance Program with the Council and the Executive Secretary and that the Council be empowered to enact the program. Motion carried.

It was requested that the Chairman of the Council re-read the portion of his report dealing with the resolution passed by the Hennepin County Medical Society on the University Cancer Detection Center, and while waiting for the resolution to be brought in, the Delegates heard a brief report on the Centennial Session of the American Medical Association, held in Atlantic City, by Dr. F. J. Savage, St. Paul, a delegate to the Session, supplemented by Dr. Coventry, also a delegate.

Dr. Elias then read the letter from the Executive Secretary of the Hennepin County Medical Society to Dr. A. E. Cardle, Councilor of the Sixth District, outlining action taken by the Society with regard to the Cancer Detection Center. A general discussion of the Cancer Detection Center took place. A resolution concerning the approval of activities affecting the practice of medicine, as applied to the Cancer Detection Center, was made and referred to the Resolutions Committee.

It was then moved that the report of the Chairman of the Council be approved. Seconded and carried.

Reports of Reference Committee

The next order of business was the reports of the various reference committees. The Speaker called first upon Dr. H. M. Carryer, Rochester, Chairman of the Reference Committee on Medical Education Reports.

Medical Education Reports

Dr. Carryer: On Sunday, June 29, 1947, there was a meeting of the Reference Committee of the House of Delegates on Medical Education Reports. At this time a number of committee reports were considered and the contents recommended for approval. These reports have been sent to each of you for study prior to this meeting. Those considered were:

Committee on Cancer—A. H. Wells, M.D., Duluth, Chairman
Committee on Conservation of Hearing—L. R. Boies, M.D., Minneapolis, Chairman
Committee on First Aid and Red Cross—J. S. Lundy, M.D., Rochester, Chairman
Heart Committee—F. J. Hirschboeck, M.D., Duluth, Chairman
Committee on Hospitals and Medical Education—H. S. Diehl, M.D., Minneapolis, Chairman
Committee on Public Health Nursing—M. McC. Fischer, Duluth, Chairman
Committee on Syphilis and Social Diseases—P. A. O'Leary, M.D., Rochester, Chairman
Committee on Tuberculosis—J. A. Myers, M.D., Minneapolis, Chairman
Committee on Vaccination and Immunization—E. J. Huenekens, M.D., Minneapolis, Chairman

Since the report of the Heart Committee was summarized and sent to you there has been an additional note concerning the report. A Committee consisting of Drs. C. N. Hensel, Saint Paul, M. J. Shapiro, Minneapolis, and F. J. Hirschboeck, Duluth, met with an executive committee of the American Public Health Association on June 25, 1947. A motion by that executive committee was passed indicating approval of a Minnesota Heart Association.

The report of Dr. Diehl covering the activities of the University of Minnesota Medical School is particularly called to the attention of every delegate for careful study in an effort to clear up much of the misunderstanding.

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The Delegates approved the report of the Reference Committee on Medical Education Reports, after which Dr. C. G. Sheppard, Hutchinson, Vice Speaker, took over the Speaker's chair and called for the report of Dr. J. F. Briggs, Chairman of the Reference Committee on Miscellaneous Scientific Reports.

Miscellaneous Scientific Reports

Dr. Briggs: The Reference Committee on Miscellaneous Scientific Reports met Sunday, June 29, 1947, and considered the following reports:

Committee on Anesthesiology—R. C. Adams, M.D., Rochester, Chairman
Committee on Child Health—G. B. Logan, M.D., Rochester, Chairman
Committee on Diabetes—J. R. Meade, M.D., St. Paul, Chairman
Committee on Fractures—V. P. Hauser, M.D., St. Paul, Chairman
Committee on General Practice—R. H. Creighton, M.D., Minneapolis, Chairman
Historical Committee—M. C. Piper, M.D., Rochester, Chairman
Committee on Industrial Health—A. E. Wilcox, M.D., Minneapolis, Chairman
Committee on Interprofessional Relations—W. P. Gardner, M.D., St. Paul, Chairman
Committee on Maternal Health—J. J. Swendson, M.D., St. Paul, Chairman
Committee on Medical Testimony—E. M. Hammes, M.D., St. Paul, Chairman
Committee on Military Affairs—R. B. Hullsiek, M.D., Minneapolis, Chairman
Committee on Nervous and Mental Diseases—W. P. Gardner, M.D., St. Paul, Chairman
Committee on Ophthalmology—T. R. Fritsche, M.D., New Ulm, Chairman
Committee on Public Health Education—S. H. Baxter, M.D., Minneapolis, Chairman
Radio Committee—R. M. Burns, M.D., St. Paul, Chairman

Your Reference Committee wishes to commend the Committee on Medical Testimony for the excellent work it is doing. Your Committee also noted the activities that have been carried on by the Committee on Public Health Education and wishes to make reference to the Subject-of-the-Month Packets which it feels is an outstanding activity carried on through the State Association offices. The Committee also feels that the radio programs of the State Association, with Dr. William A. O'Brien as spokesman, are an excellent medium for dissemination of medical and health education to the public.

The Report of the Reference Committee on Miscellaneous Scientific Reports was accepted by the Delegates.

Dr. Sheppard called upon Dr. Monte C. Piper, Chairman of the Reference Committee on Officers and Council Reports.

Officers' and Councilors' Reports

Dr. Piper: Your Committee considered the reports of the Officers and Councilors very carefully and found them to be very complete. I will take up each report separately and make a few comments.

As regards the report of the Secretary and Executive Secretary, your Committee was very much impressed with the work that has been done in the State Office during the past year and we noted the comprehensiveness of the report submitted. We recognize that the State Office has been most efficient in attending to the countless details incident to the development of the Association as a service organization. You will notice in their report they say they have held 68 meetings of committees during the year. That does not include the nine Council sessions nor the special meeting of the House of Delegates in December.

We wish to call special attention to the second paragraph of the Secretary's and Executive Secretary's report which enumerates briefly the major activities carried on by the State Office during the year. Particularly impressive is the part played by our Association in the investigation of the Faribault institution since we feel that such matters are properly the responsibility of the medical profession. We should like to see such investigations extended to other state institutions. We, therefore, heartily recommend the acceptance of this report.

Next to be considered is the report of the Treasurer, Dr. W. H. Condit. In recommending the adoption of this report, we believe the House of Delegates should extend to Dr. Condit our thanks and appreciation for his long service as Treasurer and for his efficient management of this office.

The report submitted by the Chairman of the Council was most comprehensive and thorough and we recommend that it be read carefully by every member of the House of Delegates, since it will acquaint them with the multitude of activities in which our Association figures. . . . We recommend that the report be adopted by the Delegates.

The reports of the Councilors were each carefully considered also. We are of the opinion that many of the problems cited are local in nature and should be handled by the individual districts. We would ask special attention be given to Paragraph Three of Dr. R. L. J. Kennedy's report for the First District, regarding the availability of graduate students to supply the need for general practitioners.

In Dr. L. Sogge's report, attention is called to the Cancer Institutes and the fine work done in this field. We note also that there is no report from the Third District by reason of the vacancy created by the death of Dr. C. M. Johnson of Dawson. We believe that we express the wish of the House of Delegates in voicing our deep regret over the loss of Dr. Johnson as a valued friend and faithful servant of the Association.

Dr. A. E. Sohmer's report from the Fourth District is very comprehensive and indicates a great amount of activity has been going on in that locality. We note particularly the fact that in the Fourth District several of the societies within the district have held meetings jointly during the year, with apparent mutual benefit.

The report of the Fifth District by Dr. E. M. Hammes is brief and to the point, indicating strongly the good will and spirit of co-operation in that district. As for the Sixth District, Dr. Cardle mentions particularly the mobile x-ray project and the blood bank, which have been so successful.

Dr. W. W. Will's report of the Seventh District and Dr. Burnap's report of the Eighth District are also indicative of the increasing participation by members in Association affairs. We take cognizance with regret of the fact that Dr. W. L. Burnap is requesting that he be retired at the conclusion of his term in 1948. An interesting fact worthy of mention from Dr. F. J. Elias' report of the Ninth District is that this district has incurred no loss of membership either through casualty or transfer during the year.

* * *

The Delegates voted their approval of Dr. Piper's report.

Dr J. R. Manley, Duluth, was called upon next for his report as Chairman of the Reference Committee on Medical Economics Reports.

Medical Economics Reports

Dr. Manley: The Reference Committee reviewed the report of the Committee on Medical Economics. Dr. George Earl, Chairman, submitted a comprehensive report covering his work in Minnesota Medicine and the work of his sub-committee which will be taken up in detail later. His remarks regarding the co-operative health movement in this state are pertinent and should be studied carefully. The Committee approved his report.

The Committee next reviewed the report of the Editing and Publishing Committee of which Dr. E. M. Hammes is Chairman. This is an excellent report and the Reference Committee calls your attention to the financial showing in this report since it indicates that Minnesota Medicine is maintaining a very high standard.

The Medical Advisory Committee, with Dr. W. H. Hengstler, Chairman, submitted a short report, stating there had been two malpractice cases in which they had given advice. The Committee on Medical Ethics, Dr. R. H. Mussey, Chairman, reported no breeches of medical ethics during the past year.

Next came the report of the Committee on Medical Service, headed by Dr. A. W. Adson. This is the committee which originated the prepayment plan that we have been working on now for more than a year. This report, however, does not take that up in detail since it is covered in a report to come up for discussion later. The report mentions the National Health Bill and the Hill-Burton Hospital Construction Act, both of great importance to us. The latter should be kept in mind in the development of medical service, particularly in the rural areas. This Committee is to be congratulated for its maintenance of close contact with national medical affairs.

Your Reference Committee reviewed the report of the Committee on Public Policy, of which Dr. L. Sogge is Chairman. This is one of the most important committees of the Association, and its report merits the special attention of the Delegates.

To our Committee came the report of Dr. T. H. Sweetser, Chairman of the Committee on State Health Relations. This report deals with state institutions and particularly with the hospitals for the insane. You have read, no doubt, in another report that there has been a bill passed in the legislature to appropriate more money to pay doctors who are in charge of these hospitals reasonable salaries so that the standard of care for the mentally ill can be raised.

Our Committee reviewed the report of the Committee on University Relations, of which Dr. E. J. Simons is Chairman. This is a complete report dealing with the question of whether there has been overemphasis on specialization in our University Medical School. The contention that the University is trying to develop only specialists is well refuted. I move the adoption of these reports as submitted.

* * *

The motion was seconded and carried.

Dr. Sheppard asked for the report of Dr. M. J. Anderson, Rochester, Chairman of the Reference Committee on Miscellaneous Medical Economics Reports. The following reports were accepted without comment:

Faribault Investigating Committee—T. H. Sweetser, M.D., Minneapolis, Chairman
Commitee on Licensure of Practical Nurses—W. H. Valentine, M.D., Tracy, Chairman
Committee on Rural Medical Service—P. C. Leck, M.D., Austin, Chairman
Minnesota Advisory Committee on Nursing—W. L. Burnap, M.D., Fergus Falls, Chairman
Speakers' Bureau—F. J. Heck, M.D., Rochester, Chairman
Insurance Liaison Committee—A. W. Adson, M.D., Rochester, and B. J. Branton, M.D., Willmar, Co-Chairmen

In connection with the Report of the Operating Committee for Veterans Medical Service, considered by the Reference Committee on Miscellaneous Medical Economics Reports, Dr. Sheppard called up Dr. Ralph H. Creighton, Minneapolis, for a supplementary verbal report. Following Dr. Creighton's remarks, Mr. Ray Davison, Director of the Veterans Medical Service Division, was called upon to report on some of the administrative details of the program.

Delegates heard next reports on the Minnesota Plan for Prepayment Medical Care, Dr. Olof I. Sohlberg, Saint Paul, President of Minnesota Medical Service, reporting on the progress made by that corporation, and Dr. A. W. Adson, Rochester, Chairman of the Insurance Liaison Committee, reporting on the work of the physician-insurance underwriter committees towards setting up a program utilizing the services of reliable insurance concerns in the state. After full discussion by the Delegates, the report of the Reference Committee on Miscellaneous Medical Economics Reports was accepted.

Dr. Coventry, having resumed the Speaker's chair, called for new business. Dr. T. W. Weum, Minneapolis, presented a resolution concerning the need for a state committee to investigate the various types of health and accident policies issued to members of the Minnesota State Medical Association. Following a reading of the resolution, it was referred to the Council.

A resolution, offered by the Hennepin County delegates and relating to Rh typing by the State Department of Health laboratories, was read and referred to the Resolutions Committee.

A resolution calling for the appointment by the Council or the President of a committee to study traffic problems in the state was read and referred to the Council.

The House of Delegates was then recessed until 8 p.m.

Second Meeting, Sunday, June 29, 1947

Ballroom, Hotel Duluth
Duluth, Minnesota

The second session of the House of Delegates was convened at 8 p.m. with the first item of business a report on activities of the Division of Social Welfare by its director, Mr. Jarle Leirfallom. Mr. Leirfallom was introduced by Dr. Edwin J. Simons, Chief of the Medical Unit of the Division.

Mr. Leirfallom reported that crippled children's services had been greatly expanded during the year. Orthopedic clinics had been held in various areas of the state and two counties, Anoka and Washington, had been added to the rheumatic fever project. Through family physicians, the Division had given follow-up care to children stricken with poliomyelitis and two special physiologists had been employed.

All of these developments, Mr. Leirfallom said, had the approval of the local medical societies and of the Council of the Minnesota State Medical Association.

With regard to medical care of indigents, Mr. Leirfallom noted the increase in cost of welfare programs. Factors which he included as contributing to the increase were the upward revision of the topical code and price schedule; the raising of the old age assistance maximum from $40.00 to $50.00; the no-maximum program; and the higher costs of hospitalization, drugs, etc.

Consideration had been given, Mr. Leirfallom said, to the practice of requiring prior authorization of elective surgery.

Mr. Leirfallom also discussed briefly state tuberculosis services and the mental health program. In concluding his report, he expressed his appreciation of the fine co-operation received from the members of the medical profession, both individually and collectively.

Dr. W. L. Burnap, Fergus Falls, Chairman of a special committee appointed by the Governor, the Minnesota Medical Advisory Committee on Nursing, then gave a report on the shortage of nurses which is being experienced generally over the state. Dr. Burnap pointed out that this Committee can be of great service as a liaison between the Nursing Board and the hospitals wishing to establish schools for practical nurses, or school training registered nurses. A general discussion followed Dr. Burnap's report, at the conclusion of which Dr. Julian F. Dubois, Sauk Centre, presented his report as Secretary of the Minnesota State Board of Medical Examiners.

Speaker Coventry then called upon Dr. Viktor O. Wilson, Chief of the Section on Special Services of the State Department of Health, for a report on the Minnesota Hospital Survey, the Minnesota Child Health Survey and a recent project proposed for the Health Department, that of studying the situation with regard to nitrate poisoning of certain infants receiving formulae prepared with water from contaminated wells.

Dr. Richard B. Hullsiek, Chief Medical Officer of the Veterans Administration Regional Office, addressed the Delegates briefly on the need for medical society cooperation to insure the successful operation of the Veterans Medical Care Program, supplementing previous reports by Dr. Creighton and Mr. Davison.

Dr. Monte C. Piper, Rochester, presented the annual Necrology Report. The list of names of members and former members who had passed on during the year numbered 63, with 11 members having reached the age of 80 years or more and 26 having reached at least 70. Following the reading of the names the Delegates rose and observed a moment of silence.

The meeting was recessed until 1:15 p.m. Monday.

Third Meeting, Monday, June 30, 1947

Ballroom, Hotel Duluth
Duluth, Minnesota

The final session of the House of Delegates was convened at 1:15 p.m., Monday, June 30, with Dr. Coventry presiding. The Credentials Committee reported that a quorum was present and the Delegates proceeded to the report of the Resolutions Committee, presented by Dr. E. E. Scott, Saint Paul, Chairman.

The first resolution presented and approved was one extending the thanks of the House of Delegates to the officers and members of the St. Louis County Medical Society; the St. Louis County Woman's Auxiliary and its Committee on Local Arrangements; the management of Hotel Duluth and other Duluth hotels; radio stations WEBC and KDAL; the *Duluth Herald and News-Tribune* and the *Minneapolis Morning Tribune.*

A second resolution was adopted citing the nineteenth anniversary of Dr. William A. O'Brien as radio spokesman for the Minnesota State Medical Association and thanking Dr. O'Brien and radio stations WCCO, KUOM, KROC and KFAM.

A third resolution was passed dealing with the inclusion by the State Board of Health of Rh typing among its laboratory services.

The House of Delegates resolved to extend the thanks of the Minnesota State Medical Association to all members of the Committee on Organization for Minnesota Medical Service for their loyal and self-sacrificing service in laying the foundations for Minnesota Medical Service, Incorporated.

The next order of business was the report of the Chairman of the Council, Dr. Elias. In accordance with the Licensing Laws and Standards for Hospitals and Related Institutions, Dr. Elias reported that Drs. B. O. Mork, Jr., Worthington, and T. J. Catlin, Buffalo, had been recommended for appointment to the Hospital Licensing Board.

The Council also had recommended that Drs. E. W. Hansen, Minneapolis, and F. J. Savage, Saint Paul, succeed themselves as delegates to the American Medical Association, and that Drs. George Earl, Saint Paul, and W. W. Will, Bertha, succeed themselves as alternates.

With regard to the request received from the Hennepin County Medical Society for action on a proposed cancer detection center at the University of Minnesota, the Council voted that this be held in abeyance until the Council had opportunity to meet with the Cancer Committee.

Dr. Elias read the following resolution, earlier referred to:

WHEREAS the increasing death toll resulting from automobile accidents is a matter of grave concern to all citizens, particularly the medical profession, and

WHEREAS this serious situation has been officially recognized by the President of the United States, governors, mayors, law enforcement officials, safety organizations and other groups, and

WHEREAS the medical profession in Minnesota feels that it is incumbent on its members to assume leadership in the responsibility for promoting action designed to reduce this unnecessary loss of life and injury to our citizens, and

WHEREAS only by concerted action of all groups can any appreciable progress be expected in meeting this urgent problem, now.

(Here Dr. Elias inserted the revision suggested by the Council.)

THEREFORE be it resolved that the House of Delegates of the Minnesota State Medical Association authorize the Council to appoint three representatives of the Association to sit with the Minnesota Safety Council, present the profession's views and suggestions and to co-operate with the Safety Council's efforts to reduce traffic accidents.

The adoption of the resolution as revised by the Council was moved, seconded and carried.

It was moved and seconded that a Liaison Committee from the Council be appointed to confer with the Governor concerning appointments to the State Board of Health. Motion carried.

Dr. Elias then read a resolution submitted to the Council at its morning session:

WHEREAS the widespread publicity given to the use of BCG in controlling tuberculosis in humans is leading to a feeling of security in the public mind, and

WHEREAS no well controlled study has been made over an adequate period of time to prove that infection with BCG produces dependable immunity against tuberculosis, and

WHEREAS there is need for further study of special groups under carefully controlled conditions with sufficient time to make the experiment worth while before its use is publicly advocated, and

WHEREAS in the State of Minnesota highly satisfactory results are being obtained by proved methods, as shown by the marked reduction in mortality, morbidity and infection attack rates, every effort possible should be exerted to protect these results, and

WHEREAS to be infected with BCG sensitizes the tissues and thus nullifies the value of the tuberculin test which has been used so effectively therefore be it

RESOLVED, that the Minnesota State Medical Association now meeting in its Ninety-fourth Session go on record as opposing the use of BCG in the State of Minnesota except on special groups under carefully supervised and controlled study, and only after having proper consideration by the State Medical Association.

Dr. Elias said that at the Council meeting approval of that body had been given to this resolution; and after some discussion, the Delegates also voted approval.

After being introduced to the Delegates by Dr. Louis A. Buie, Rochester, Mr. Charles H. Crownhart, Madison, Wisconsin, Secretary of the State Medical Society of Wisconsin, addressed the House briefly.

Following Mr. Crownhart's talk, Dr. Sheppard, Vice Speaker, took over for the annual election of officers. The following officers were unanimously elected by the Delegates:

President-elect: Archibald E. Cardle, Minneapolis

First Vice President: J. R. Manley, Duluth

Second Vice President: G. Irving Badeaux, Brainerd

Secretary: Benjamin B. Souster, Saint Paul (re-elected)

Treasurer: W. H. Condit, Minneapolis (re-elected)

Speaker of the House: C. G. Sheppard, Hutchinson

Vice Speaker: H. M. Carryer, Rochester

Councilor, First District: R. L. J. Kennedy, Rochester (re-elected)

Councilor, Second District: L. L. Sogge, Windom (re-elected)

Councilor, Third District (to replace C. M. Johnson, Dawson, deceased): L. G. Smith, Montevideo

Councilor, Sixth District (to fill the unexpired term of Dr. Cardle): O. J. Campbell, Minneapolis

Councilor, Ninth District: Frank J. Elias, Duluth (re-elected)

Delegates to the American Medical Association: E. W. Hansen, Minneapolis (re-elected), and F. J. Savage, Saint Paul (re-elected)

Alternates: W. W. Will, Bertha (re-elected) and George Earl, Saint Paul (re-elected)

It was then moved, seconded and carried that the invitation of the Hennepin County Medical Society to hold the 1948 Convention in Minneapolis be accepted.

At 2:45 p.m. the Ninety-fourth Annual Meeting of the House of Delegates was adjourned.

SPECIAL FEATURES

At the annual banquet of the Minnesota State Medical Association, held in the Ballroom of Hotel Duluth, Tuesday evening, July 1, special recognition was given to several Minnesota physicians.

Admitted to the Fifty Club, in recognition of their fifty years of loyal and devoted service in the medical profession, were the following twenty-two doctors: J. F. Corbett, George B. Hamlin, A. J. H. Hammond and G. D. Head, Minneapolis; Robert Earl, L. A. Nelson and W. R. Ramsey, Saint Paul; A. H. Brown, Pipestone; M. A. Burns, Milan; J. E. Crewe, Rochester; S. A. Drake, Lanesboro; H. P. Dredge, Sandstone; J. F. Gendron, Grand Rapids; Roland Gilmore, Bemidji; J. H. Haines, Stillwater; G. H. Mesker, Cambridge; W. L. Palmer, Albert Lea; George F. Reinecke, New Ulm; George J. Schottler, Dexter; J. A. Thabes, Sr., Brainerd; Morrill E. Withrow, International Falls; and W. E. Wray, Campbell.

The Southern Minnesota Medical Association Medal, awarded each year to the individual physician presenting the most outstanding scientific exhibit at the annual meeting, was awarded this year to Dr. A. H. Wells, St. Luke's Hospital, Duluth, for his exhibit on pathologic anatomy. Honorable mention was accorded to another Duluth physician, W. V. Knoll, St. Mary's Hospital, for his "watch-glass" display of specimens and Kodachrome transparencies. Judges were A. E. Cardle, Minneapolis; R. P. Buckley, Duluth; and R. N. Barr, Saint Paul.

Presentation of Distinguished Service Medal to Dr. A. W. Adson

In appreciation of his many years of service to the profession and to the Association, Dr. Alfred W. Adson, former president of the Minnesota State Medical Association and present delegate to the American Medical Association, was awarded the *1947 Distinguished Service Medal and Citation.* Presentation was made by Dr. Frank J. Elias, Chairman of the Council.

DR. ELIAS: I deem it a great privilege, as Chairman of the Council of the Minnesota State Medical Association, to honor one of our most active and distinguished members this evening. I say distinguished because he has served our Association long and well—as a former president, as committee chairman and as a delegate to the American Medical Association.

A prominent neurosurgeon, he is a professor in the Mayo Foundation graduate school of the University of Minnesota and chief of the section on neurosurgery of the Mayo Clinic. He is a fellow in the American College of Surgeons, as well as a member of several other societies related to his profession. These include the American Neurological Association, the American Surgical Association, the Association of Military Surgeons, the Association on Research in Nervous and Mental Diseases, the Central Neuropsychiatric Association, the International Neurological Association, the Western Surgical Association and the Society of Neurological Surgeons, of which he is a past president.

His contributions to the advancement of scientific medicine have been noteworthy, and he has an equally fine record with regard to his efforts in behalf of organized medicine. His active participation on councils of the American Medical Association, particularly his tireless efforts in promoting the extension of medical services, not only in Minnesota but in the nation, are deserving of commendation and encouragement.

And so, at this time, for his devoted and illustrious service to medicine, the Council of the Minnesota State Medical Association awards its 1947 distinguished service medal to Dr. Alfred W. Adson of Rochester. It is an honor and a great pleasure to confer upon him at this time this citation and this medal of which he is so richly deserving.

WOMAN'S AUXILIARY

Renville County

The regular dinner meeting of the Renville County Medical Society and Auxiliary was held at Olivia on October 21, after which each group held separate meetings. Mrs. A. A. Passer, regional advisor for the 4th Councillor District, was present and suggested that membership, sale of *Hygeia* and the *Bulletin* be particularly stressed this year and that each member "talk county nurse." As an added appeal to students to participate in the Christmas Seal Essay Contest, the Auxiliary voted to give prizes of $5, $3, and $2 to the three best essays in the county.

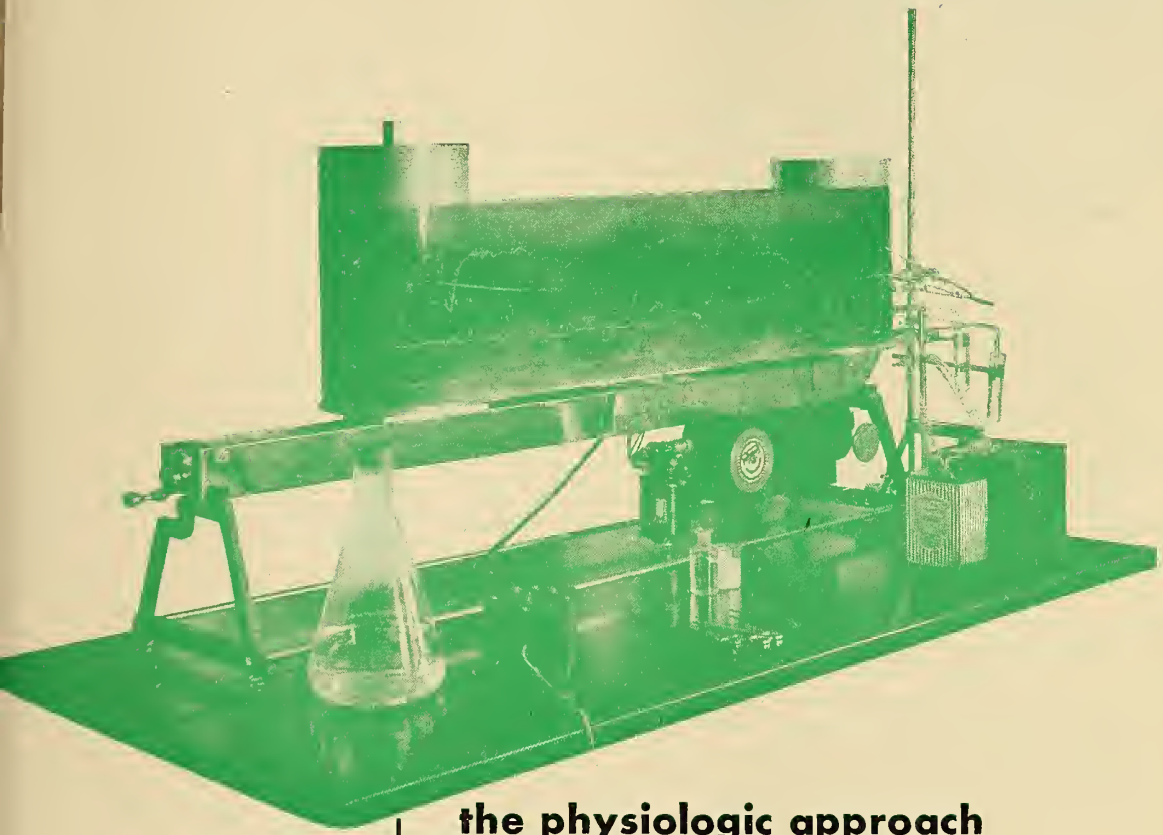
Stearns-Benton

Nine communities were represented when the Stearns-Benton Auxiliary met on October 23 at the home of Mrs. H. B. Clark, St. Cloud, with Mrs. J. Buscher assisting. The Auxiliary went on record as favoring appointment of a public health nurse for both counties. Members will assist with the mobile x-ray tuberculosis unit. Chairmen were named for *Hygeia* and Postwar Planning Committees. At each meeting articles are received for the layette which the Auxiliary is again sponsoring for needy mothers. Cancer dressings will be one of the major projects of the Auxiliary this coming year, and women of the communities are invited to come and help with this urgent and worth-while activity.

Mrs. Buscher gave a report of the Atlantic City meeting. New members were added, making the membership this year thirty-seven. An interesting talk on "hosteling in Europe" was given by Miss Patricia Butler, recently returned from the Continent.

West Central

West Central Auxiliary mourns the passing of Mrs. Charles Bolsta of Ortonville who has a long record of activity in the Auxiliary.



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Reports and Announcements

INTERNATIONAL COLLEGE OF SURGEONS

At the twelfth assembly and convocation of the United States Chapter, International College of Surgeons, held in Chicago on October 3, the following Minnesota physicians were among the 810 surgeons inducted into the College:

Fellows: Dr. Reinhold Milton Ericson, and Dr. Gerald M. Koepcke, Minneapolis.

Associates: Dr. Philemon C. Roy, Saint Paul; Dr. Kenneth H. Abbott, Rochester; Dr. Philip E. Gordon, Dr. John Korchik, and Dr. Daniel B. Mark, all of Minneapolis.

Affiliates: Dr. Gilbert P. Wenzel, Dr. Merchislaw M. Sarnecki, and Dr. Emil J. Fogelberg, Saint Paul; Dr. Lawrence J. Happe, Minneapolis, and Dr. James K. Keeley, Rochester.

Matriculates: Dr. Samuel Leonard, Minneapolis and Dr. Selmer Milo Loken, Saint Paul.

GEORGE CHASE CHRISTIAN LECTURE

One of the nation's outstanding leaders in the war on cancer, Dr. C. P. Rhoads, New York City, delivered the University of Minnesota's annual George Chase Christian cancer lecture in the Museum of Natural History auditorium on the evening of October 20.

The subject of Dr. Rhoads' address was "Clinical Investigation of Neoplastic Disease."

In addition to his duties as director of the Memorial Hospital Center for Cancer and Allied Diseases and the Sloan-Kettering Institute for Cancer Research, in New York, Dr. Rhoads is also chairman of the Committee on Growth of the National Research Council and is responsible for the distribution of a large share of the research funds raised by the American Cancer Society.

At a medical school seminar held earlier in the day on October 20, Dr. Rhoads spoke on "Butter Yellow Carcinogenesis and Cancer Biology."

MINNESOTA SOCIETY OF CLINICAL PATHOLOGISTS

A two-day meeting was held in Rochester on September 27 and 28 by the Minnesota Society of Clinical Pathologists.

After a morning of visiting the pathological laboratories of the Mayo Clinic and St. Mary's and Colonial Hospitals, the society members spent the afternoon of the first day at a seminar in hematology held in the Mayo Foundation House. On the morning of the second day a program was conducted in St. Mary's Hospital by staff members of the Mayo Clinic. In charge of the program were Dr. P. G. Sayre and Dr. G. G. Stilwell of Rochester. President of the society is Dr. A. H. Baggenstoss, Rochester.

ST. LOUIS COUNTY SOCIETY

A joint banquet meeting was held October 9 in Hibbing by the members of the St. Louis County Medical Society and its auxiliary.

Principal speaker at the meeting was Dr. O. I. Sohlberg, Saint Paul, president of the Minnesota Medical Service, who spoke on prepaid medical care versus socialized medicine.

Under the direction of Dr. E. L. Tuohy, society members from Duluth conducted a clinical-pathological conference for the scientific program, participated in by Dr. F. G. Chermak, International Falls, and Dr. Randall Derifield and Dr. Carl N. Harris, Hibbing.

At the meeting tribute was paid to the late Dr. C. W. More of Eveleth.

Dr. Robert Murray, Hibbing, secretary of the society, was in charge of arrangements for the meeting.

WABASHA COUNTY SOCIETY

The seventy-ninth annual meeting of the Wabasha County Medical Society was held in Wabasha on October 9.

At a business session in the afternoon, the society members drafted an appeal to the State Public Health Service to send into the locality as soon as possible one of the mobile x-ray units for a chest x-ray survey. The members also adopted a resolution of appreciation of the efforts of the *Lake City Graphic* in pointing out editorially in recent years some of the dangers of socialized medicine.

New officers elected at the meeting were Dr. R. N. Bowers, Lake City, president; Dr. T. G. Wellman, Lake City, vice president, and Dr. W. F. Wilson, Lake City, secretary-treasurer. It was decided to hold the next annual meeting at Lake City.

Guest speakers at a dinner preceding the evening scientific session were Dr. A. J. Chesley, secretary and executive officer of the State Board of Health, and Dr. P. T. Watson, director of the Division of Local Health Services.

The program for the evening scientific session included the following:

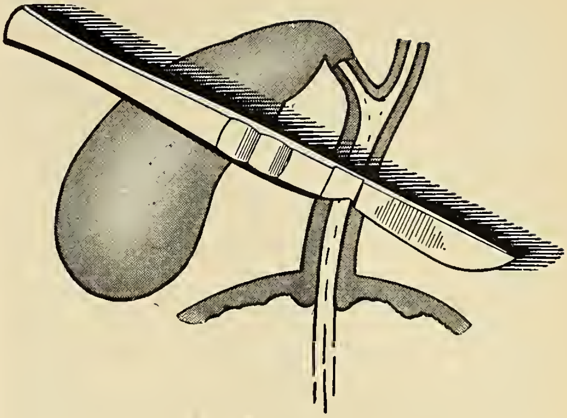
President's Address—"Some Experiences with Vitamin K"—Dr. B. A. Flesche, Lake City.

"Minnesota Medical Service Incorporated"—Dr. E. C. Bayley, Lake City.

"Ether by the Semi-Open Drop Method"—Dr. Albert Faulconer, Rochester.

"Report on a Meeting of the Anesthesiology Committee of the State Medical Association"—Dr. W. P. Gjerde, Lake City.

Preventive medicine requires the co-operation of the patient, and this in turn predicates the existence of a personal and confidential relationship between the physician, who serves as health advisor, and the family.—Medicine in the Changing Order, Rep. N. Y. Acad. Med. Comm., The Commonwealth Fund, 1947.



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Of General Interest

After practicing in Brainerd for ten years, Dr. George J. Halladay recently commenced a three-year fellowship in otolaryngology at the University of Minnesota.

* * *

Appointed as a fellow in the Mayo Foundation, Dr. L. A. Badheim has moved to Rochester from Tyler, where he had been conducting his medical practice.

* * *

A medical practitioner in Glencoe since 1935, Dr. H. C. Goss recently joined the staff of the Glencoe Clinic, where he is now associated with Dr. A. Neumaier and Dr. C. W. Truesdale.

* * *

Word has been received that Donald A. Dukelow, health director of the Community Chest in Minneapolis, has been elected secretary of the Education Section of the American Public Health Association.

* * *

Included in the Minnesota physicians who attended the meeting of the United States Chapter of the International College of Surgeons, held in Chicago early in October, were Dr. Thomas A. Lowe and Dr. R. B. Tregilgas, South Saint Paul; Dr. O. J. Hagen, Moorhead, and Dr. Homer H. Hedemark, Ortonville.

In charge of the Chippewa Hospital at Cass Lake for the past three years, Dr. Philip A. Klieger recently left for Sacramento, California, to become state director of the Department of Health.

* * *

Early in October Dr. L. A. Brunsting, Rochester, attended the triennial medical alumni reunion of the University of Michigan at Ann Arbor, where he presented a paper entitled "The Antihistamine Drugs."

* * *

Dr. M. W. Comfort, Rochester, was in Charlottesville, Virginia, October 3, where he addressed the students and faculty of the medical school of the University of Virginia on the subject, "Pancreatitis."

* * *

At a meeting of the American Academy of Neurosurgeons in Colorado Springs, Colorado, early in October, Dr. H. M. Keith, Rochester, presented a paper entitled "Tumors of the Brain in Children."

* * *

Experiences in China with the UNRRA were narrated by Dr. Selma Mueller, Duluth, who spoke at a meeting of the St. Luke's Nurses Alumnae Association held October 6 in St. Luke's Hospital, Duluth.

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Dr. J. Richard Aurelius and Dr. Thomas B. Merner have opened offices for association in the practice of diagnostic roentgenology at 1355 Lowry Medical Arts Building, Saint Paul.

* * *

On October 1, Dr. William C. Dodds left Park Rapids, where he had been associated with Dr. D. M. Houston for several months, to accept a partnership with Dr. A. R. Ellingson of Detroit Lakes.

* * *

One of the speakers at the eighth regional Minnesota Welfare Conference held October 15 at the state training school in Red Wing, was Dr. Maurice M. Walch, assistant professor of neuropsychiatry in the Mayo Foundation.

* * *

In Lisbon, Portugal, early in October, Dr. Charles W. Mayo, Rochester, participated in the program of the Second International Course on Emergencies by presenting several papers and giving several motion picture demonstrations.

* * *

At the meeting of the International College of Surgeons held in Chicago early in October, Dr. W. C. MacCarty, Rochester, presented a paper entitled "Early Diagnosis of Abdominal Neoplasms" and took part in a panel discussion on "Cancer of the Breast."

* * *

"Aerosol Therapy in Bronchiectasis" was the title of a paper presented by Dr. A. M. Olsen, Rochester, at a meeting of the Potomac Chapter of the American College of Chest Physicians in Washington, D. C., October 5.

* * *

When residents of Blue Mounds township met at District 95 on September 30 to discuss a proposed addition to the Minnewaska Hospital, Dr. A. F. Giesen of Starbuck was present as the principal speaker to explain and clarify problems in regard to the matter.

* * *

Dr. R. O. Johnston, formerly of Nashwauk, has been engaged by the Board of School District 27 as physician for the district. Before returning to live near his former Nashwauk home, Dr. Johnston practiced for fifteen years in New Jersey and spent four years in the Army.

* * *

Honorary fellowship in the International College of Surgeons was awarded to Dr. Henry W. Meyerding, Rochester, at the annual meeting of the organization in Chicago, October 3. Dr. Meyerding is a member of the orthopedic surgery staff of the Mayo Clinic and professor of surgery in the Mayo Foundation.

* * *

The prepaid medical care plan sponsored by Minnesota Medical Service, Inc., was explained by Dr. W. A. Coventry, Duluth, in a talk given at a meeting held September 30 in the Duluth Central YMCA. The dinner meeting was arranged by the Council of Social Agencies' Health and Hospital Committee, of which Dr. Mario Fischer is chairman.

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*Goldthwait, J. E., Brown, L. Y., Swaim, L. T., and Kuhns, J. G., *Body Mechanics in Health and Disease,* 103-105, J. B. Lippincott Co., Philadelphia, 1937.

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Two papers were presented by Dr. E. E. Gambill, Rochester, at a meeting of the Panhandle District Medical Society in Lubbock, Texas, October 14. The subjects of his papers were "The Investigation and Treatment of Patients with Jaundice" and "The Recognition and Treatment of Patients with Peptic Ulcer."

* * *

Among the physicians attending the thirty-third meeting of the Rock Island Lines' Surgical Association in Des Moines, Iowa, October 2 and 3, were Dr. J. A. Sanford, Farmington, and Dr. D. E. Morehead, Owatonna, both members of the railroad's medical-surgical staff.

* * *

Announcement has been made that Dr. Adelaide McFayden Johnson has been appointed clinical associate professor in psychiatry and neurology at the University of Minnesota. Dr. Johnson is the wife of Dr. Victor Johnson, new director of the Mayo Foundation for Medical Education and Research.

* * *

On the staff of the Mayo Foundation since 1929, Dr. Oren L. Kirklin has moved from Rochester to Indianapolis, Indiana, to enter private medical practice. A graduate of Indiana University in 1928, Dr. Kirklin entered the Mayo Foundation as a fellow in 1929 and was appointed an associate in medicine in 1934.

* * *

Hospital and medical librarians from five states heard Dr. William A. O'Brien, director of postgraduate medical education at the University of Minnesota, discuss "Guideposts for Hospital and Medical Librarians" when they met with the Regional Library Conference in Minneapolis on October 6.

* * *

At a meeting in Eveleth on September 23, the members of the Range Medical Association heard Dr. John McKelvey, chief of the Department of Obstetrics and Gynecology at the University of Minnesota, speak on modern principles of treatment for preventing obstetric deaths.

* * *

A new addition to the Bratrud Clinic in Thief River Falls is Dr. Edward A. Johnson, a graduate of the University of Minnesota Medical School in 1944, who recently completed a period of service in the Navy. Dr. Johnson will be associated with Dr. R. M. Watson of the clinic staff, specializing in obstetrics and gynecology.

* * *

After jumping his way to victory in September, Dr. L. A. Steffens of Red Wing was named state "mail" checkers champion in the annual tournament conducted by the Minnesota State Checker Association. Champion at the University of Minnesota in 1919, Dr. Steffens entered the tournament this year for the first time and won in a field of twenty entrants.

* * *

Dr. H. M. St. Cyr, a graduate of the University of Minnesota who recently completed an internship at St. Luke's Hospital, Duluth, was married on September 23 to Miss Margaret Christenson, formerly of Aitkin, in Trinity Lutheran Church in Duluth. Dr. St. Cyr has been called to active duty in the Army medical corps and will be stationed in Germany, where his wife plans to join him.

* * *

At the thirtieth annual meeting of the American Dietetic Association in Philadelphia on October 16, Dr. Ancel Keys, director of the University of Minnesota's laboratory of physiological hygiene, spoke on "Nutrition in Relation to the Genesis and Course of Degenerative Diseases." The day before the meeting Dr. Keys conferred with military officials in Washington on medical research projects.

* * *

Gibbon will again have its own resident physician after July 1, 1948, when Dr. John Glaeser, Chaska, completes his tour of duty in the army and moves to Gibbon to open his medical practice. Dr. Glaeser, a graduate of the University of Minnesota, recently purchased the residence and practice of Dr. P. C. Benton, formerly of Gibbon. At present, arrangements are being made to secure a temporary resident physician until Dr. Glaeser is released from the army.

* * *

On September 25, Dr. I. F. Seeley began his fortieth year of service as a physician in Northfield.

After graduating in 1903 from the University of Iowa, Dr. Seeley practiced in several other communities for short periods of time, then spent two years as physician to a construction company when the company was building the Milwaukee Railroad from Saint Paul to Montana. In 1908 he moved to Northfield, where he has practiced medicine for the last thirty-nine years.

* * *

The September meeting of the medical staff of St. Luke's Hospital, Duluth, featured Dr. Walter G. Maddock, professor of surgery, Northwestern University, who spoke on "Parenteral Fluids for the Seriously Ill Medical or Surgical Patient." Guest speaker at the October meeting of the staff was Dr. Miland Knapp, head of the Department of Physical Medicine, University of Minnesota, who discussed "Rationale of Treatment of the Muscular After Effects of Poliomyelitis."

* * *

Formerly of Minneapolis, Dr. Norton Rogin has joined Dr. J. A. Sanford in Farmington in the practice of medicine. Dr. Rogin has also taken over the Lakeville office of Dr. Paul Wagner, who recently moved to Oregon. A graduate of the University of Minnesota Medical School, Dr. Rogin interned at Queens General Hospital in New York, then served for twenty-five months in the Army. Before going to Farmington, he was a resident physician at Abbott Hospital in Minneapolis.

* * *

Approximately 100 members of the Ramsey County Medical Society attended a meeting held September 23 in Saint Paul to celebrate the fiftieth anniversary of the founding of the society library. Guest speaker for the event was Dr. John F. Fulton, Sterling professor of physiology at Yale University, who spoke on "Early

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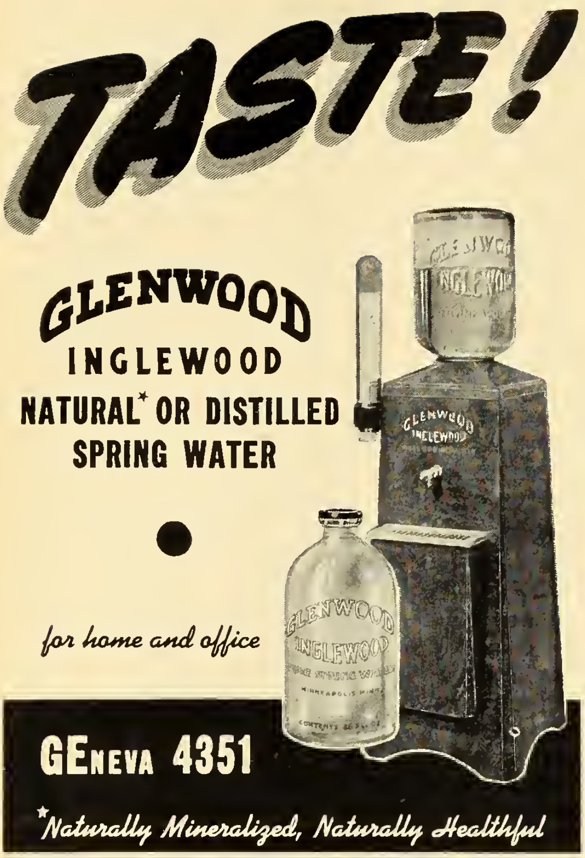
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Years of Andreas Vesalius." Other speakers included Miss Perrie Jones, librarian of the Saint Paul Library, and Dr. Wallace H. Cole, chairman of the Library Committee.

* * *

After twelve years as chairman of the Blue Earth County Public Health Association, Dr. A. G. Liedloff, Mankato, has retired from office. In his honor a dinner was given on October 9 by association members, attended by representatives of the association executive board, county commissioners and public health nurses.

To replace Dr. Liedloff, Dr. A. F. Kemp, Mankato city health officer, has been appointed chairman of the association. Dr. Liedloff still retains his position as district health officer.

* * *

In Atlantic City on October 6, Dr. J. Arthur Myers, University of Minnesota Medical School, stated at the seventh annual meeting of the American Public Health Association that early detection and not vaccination is the answer to the problem of tuberculosis. He said that BCG and other proposed vaccines would "serve only as a smoke screen for the tubercle bacillus in Minnesota." He also told the group that in sizable areas in Minnesota tuberculosis had been eradicated at the school-age level but that total eradication would be "several decades away."

* * *

Brownsville, Texas, was the destination of Dr. H. A. Miller when he left Fairmont on September 29 after closing his medical practice there. Dr. Miller had purchased a building in Brownsville and planned to open a clinic with the assistance of his two sons, Dr. Harry E. Miller and Dr. John B. Miller. Dr. Harry E. Miller has been taking postgraduate work in surgery in Detroit for the past six years, while Dr. John B. Miller, an obstetrician, is at present in military service stationed in Hawaii. The two sons will join Dr. H. A. Miller in Brownsville, Texas, early in 1948.

* * *

Of the 26,826 persons x-rayed in Blue Earth County and North Mankato in a recent survey, 144 showed definite signs of tuberculosis, it has been announced by Dr. Hilbert Mark, director of the Tuberculosis Division of the State Board of Health. Seventy-nine other persons are suspected of having tuberculosis, while diagnosis has been deferred in more than 60 other individuals. About half of the cases of tuberculosis discovered during the survey required medical or sanatorium care. The x-ray campaign also revealed 360 persons with enlarged hearts.

* * *

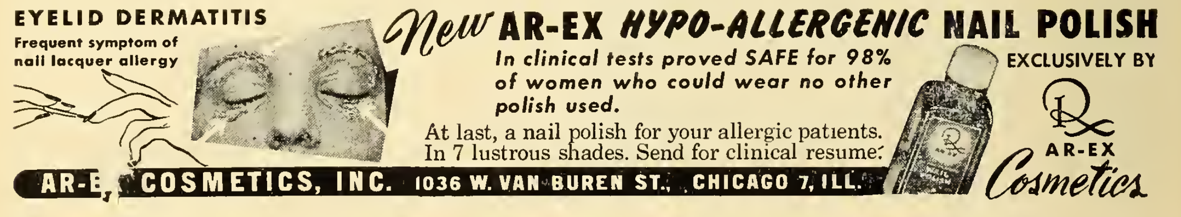
In Chicago on September 30, Dr. Stanley F. Maxeiner, clinical associate professor of surgery at the University of Minnesota, told the International Congress of Surgeons that soft but tough gum-rubber tubing, wrapped tightly around a severely injured leg, will practically amputate the extremity without shock, pain or danger.

"If the rubber tubing is allowed to remain for a week or ten days, it will completely sever the extremity down to the bone almost painlessly and without any shock or deleterious general effect," Dr. Maxeiner said. "At a later date, when the patient's condition will permit, the bone may be severed and a hazardous operation converted into a practically harmless one."

* * *

Chinese medical practice was described by Dr. L. H. Klefstadt, of the More Hospital, Eveleth, in a talk given at the October 1 meeting of the Rotary Club in Virginia.

"In general, there has been little change in the practice of medicine in China in the last twenty centuries, al-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though the better hospitals have excellent obstetricians and good surgeons," Dr. Klefstadt told the group. He said the old Chinese medical men still dry the innards of tigers, grind the tails and teeth, and prescribe use of the powder to the afflicted.

Dr. Klefstadt served in the Navy from 1943 to 1946, spending much of that time in the Phillipines, Korea and China.

* * *

Officially retiring on October 1 as director of the Mayo Foundation for Medical Education and Research, Dr. Donald C. Balfour ended ten years of service in that position. He now is director emeritus and professor of surgery emeritus of the Foundation. He continues to be senior consultant in surgery at the Mayo Clinic.

First entering the Mayo Clinic as an assistant in pathology, Dr. Balfour became a clinical assistant in 1908, junior surgeon in 1909, and head of a section in the division of surgery in 1912. He became associate director of the Mayo Foundation in 1935 and succeeded Dr. Louis B. Wilson as director in 1937.

Succeeding Dr. Balfour is Dr. Victor Johnson, former secretary of the Council on Medical Education and Hospitals for the AMA, who joined the Foundation April 1 as associate director.

* * *

Some figures on the number of medical school graduates seeking advanced training were quoted by Dr. Victor Johnson, Rochester, in a statement made as he assumed directorship of the Mayo Foundation on October 1.

"Before the war about 5,200 men were in graduate medical training schools," he said. "Today there are about 12,000 men studying at that level of medical training."

In regard to Mayo Foundation facilities, Dr. Johnson stated: "We have many more applicants here than we can handle at present. This is true partly because of our commitments to fellows whose training was interrupted by the war, and who were told they could come back here and complete their work when they were discharged from the service. Right now we have 552 fellows enrolled here for study. Before the war the maximum was 360, in 1941."

* * *

"Multiple Births of Man" was the topic discussed by Dr. George W. Corner, director of the Carnegie Laboratory of Embryology, Baltimore, Maryland, when he spoke at the University of Minnesota's Museum of Natural History on October 16. The lecture was sponsored by the Minnesota Human Genetics League and the Dight Institute for the Promotion of Human Genetics.

Author of many books, Dr. Corner has been on the faculty of the University of California, Johns Hopkins Medical School, and the University of Rochester, as well as a special lecturer at the Royal College of Surgeons, London, and at Princeton and Yale Universities.

On October 17 Dr. Corner spoke on "The Nature and Causes of Prenatal Mortality and Congenital Defects" at a meeting principally for medical students.

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More than 200 alumni of the Mayo Foundation met in Rochester October 8, 9 and 10 for the twenty-fourth annual meeting of the Mayo Foundation Alumni Association. The meeting was the first since 1941 when seventy-five alumni gathered to hear scientific lectures by their colleagues and to renew friendships of fellowship days.

Speakers at the scientific sessions of the three-day meeting included Doctors R. B. Wilson, W. F. Kvale, E. J. Kepler, R. G. Sprague, E. H. Rynearson, F. R. Keating, L. E. Prickman, P. A. O'Leary, D. R. Nichols, C. H. Slocumb, F. J. Heck and E. D. Bayrd, all members of the present Mayo Clinic staff.

"Our Medical Heritage and Its Promise" was the title of the second Judd-Plummer memorial lecture delivered on the evening of October 8 by Dr. Raymond B. Allen, former fellow of the Mayo Foundation, now president of the University of Washington.

President of the association, Dr. W. H. Long, now of Fargo, North Dakota, delivered his presidential address at the opening of the fourth scientific session on October 9.

During the three-day meeting the Foundation alumni attended surgical clinics, medical rounds in the hospitals, and demonstrations of current medical research.

* * *

At the meeting of the Minnesota Society of Internal Medicine held October 20 in Saint Paul, Dr. Daniel W. Wheeler, Duluth, was elected president, succeeding Dr. Charles Watson, Rochester, as head of the organization. Also elected at the society's annual meeting was Dr. John A. Lepak, Saint Paul, as vice president, while Dr. Alexander E. Brown, Rochester, was re-elected secretary-treasurer. The next meeting of the group will be held in Duluth in the spring of 1948.

* * *

Following his discharge from the army in June, Dr. Robert J. Brotchner has opened an office at 244 Lowry Medical Arts Building, Saint Paul, for the practice of internal medicine. Dr. Brotchner was graduated from the University of Minnesota Medical School in 1935, spent two years at Minneapolis General Hospital as an intern and medical resident, two years at Midway Hospital, Saint Paul, and a year with Dr. E. T. Bell in pathology at the University of Minnesota. He then practiced for a short time at Minot, North Dakota, before enlisting in the army in 1940.

* * *

Dr. Richard J. Plunkett has been appointed associate editor of the *Journal of the AMA*. Dr. Plunkett, who formerly was vice president and director of the Division of Health and Sanitation of the Institute of Inter-American Affairs in Washington, D. C., received his medical degree from Tufts Medical College in 1933 and his master's degree in public health from Harvard in 1939.

* * *

Physicians throughout the nation are being asked to furnish medical evidence to substantiate the claims of railroad workers who may now draw cash sickness benefits under the Railroad Unemployment Insurance Act. The Railroad Retirement Board has pointed out that unless an application is mailed not later than the seventh day after the first day of sickness claimed, it may not be received within the legal time limit for filing applications. As a result, the employe may lose one or more days' benefits. Doctors are asked either to return each completed statement of sickness to the patient, or mail it promptly to the office of the Board to which it is addressed.

* * *

A four-day laymen's course in tuberculosis control opened October 28 at the University of Minnesota Center for Continuation Study under auspices of the University and the Minnesota Public Health Association. Approximately seventy registrants took the course, which was planned for members of the Minnesota

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Public Health Association interested in the control of tuberculosis. Lectures were held at the Center with demonstrations at Glen Lake Sanatorium and the Tuberculosis Control Division of the Minnesota Department of Health on the University campus. Specialists in various phases of tuberculosis treatment and control comprised the faculty for the short course.

* * *

Honoring the memory of the late Dr. Robert G. Green, former head of the Department of Bacteriology in the University of Minnesota Medical School, the Minnesota Cancer Society has presented the University with a $5,000 grant to support a cancer research fellowship.

The grant was accepted by the Board of Regents of the University at a meeting on the campus, November 1, and was assigned to the Minnesota Cancer Society research fund to support a fellowship in the division of cancer biology. This research fellowship is held by Dr. Robert A. Huseby, assistant professor of cancer biology.

A check for $5,000 covering the memorial grant has been presented to the University by Dr. William A. O'Brien, president of the Minnesota Cancer Society, and Mrs. S. E. Linsley, executive secretary.

Long an outstanding figure in cancer research work at the University, Dr. Green died September 6, 1947.

HOSPITAL NEWS

Newly elected president of the medical staff of Northwestern Hospital, Minneapolis, is Dr. J. C. Miller, who succeeds Dr. L. Haines Fowler. Dr. Malcolm Hanson has been elected vice president and Dr. R. S. Ylvisaker re-elected secretary-treasurer. Named to the Executive Committee are Dr. R. E. Hultkrans, Dr. William Sadler, Dr. Harold S. Trueman and Dr. William R. Jones, all of Minneapolis.

* * *

In October, Dr. Viktor O. Wilson, chief of the Special Services Section in the State Department of Health, announced that an administrative organization would be set up by November 1 to direct a $24,000,000 hospital construction program in Minnesota during the next five years. It was expected that applications for construction funds would begin after January 1.

The Federal government, through the State Department of Health, will grant approximately $8,000,000 for hospital construction in the state, while owners of the individual hospitals will supply two-thirds of the construction costs.

* * *

A new 140,000-volt x-ray therapy machine has been installed at Wesley Hospital in Wadena to increase the therapeutic service of the hospital. The apparatus will be used under the supervision of Dr. S. Freifeld, radiologist at Wesley Hospital and at five other hospitals in the area.

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BOOK REVIEWS

Books listed here become the property of the Ramsey, Hennepin and St. Louis County Medical Libraries when reviewed. Members, however, are urged to write reviews of any or every recent book which may be of interest to physicians.

Headache. Louis G. Moench, M.D. Assistant Clinical Professor of Medicine, University of Utah School of Medicine; internist, Salt Lake Clinic, Salt Lake City. 207 pages. Illus. Price, cloth, $3.50. Chicago: Year Book Publishers, 1947.

Pharmacology, Therapeutics and Prescription Writing. For students and practitioners. Fifth Edition. Walter Arthur Bastedo, Ph.D., Ph.M. (Hon.), M.D., Sc.D (Hon.) F.A.C.P. Consulting physician, St. Luke's Hospital, New York; St. Vincent's Hospital, Staten Island, and the Staten Island Hospital; president U.S.P. Convention 1930-40, member Revision Committee, U.S.P., etc., 840 pages. Illus. Price, cloth, $8.50. Philadelphia: W. B. Saunders Company, 1947.

Textbook of Clinical Neurology. With an Introduction to the History of Neurology. Sixth Edition. Israel S. Wechsler, M.D. Clinical Professor of Neurology, Columbia University, New York; neurologist, Mt. Sinai Hospital; consulting neurologist, Montefiore Hospital and Rockland State Hospital, New York. 829 pages. Illus. Price, cloth, $8.50. Philadelphia: W. B. Saunders Company, 1947.

Gifford's Textbook of Ophthalmology. Fourth Edition. Francis H. Adler, M.D. Professor of Ophthalmology, University of Pennsylvania Medical School. 512 pages. Illus. Price, cloth, $6.00. Philadelphia: W. B. Saunders Company, 1947.

The Oculorotary Muscles. Richard G. Scobee, B.A., M.D. Instructor in Ophthalmology, Washington University School of Medicine, St. Louis, Missouri. 359 pages. Illus. Price, $8.00, cloth. St. Louis: C. V. Mosby Co., 1947.

The Years After Fifty. Wingate M. Johnson, M.D. Professor of Clinical Medicine and Chief of Private Diagnostic Clinic, Bowman Gray School of Medicine of Wake Forest College. Foreword by Morris Fishbein, M.D., editor of Journal of the American Medical Association. 153 pages. Price, $2.00, cloth. New York: Whittlesey House, McGraw-Hill Book Co., 1947.

OBSTETRICAL PRACTICE. Alfred C. Beck, M.D., Professor of Obstetrics and Gynecology, Long Island College of Medicine, Brooklyn, N. Y. 4th ed. 966 pages. Illus. Price $7.00. Balitmore: Williams & Wilkins Co., 1947.

Dr. Beck in this the fourth edition of his textbook of Obstetrical Practice, has enhanced the value of an already excellent treatise by adding a chapter on analgesia amnesia and anesthesia. It has been brought thoroughly up to date, particularly in respect to chemo-antibiotic therapy.

The drawings are clear and easily understood. In the handling of controversial questions, he has adopted a conservative attitude. His chapters on management of pregnancy and toxicosis of pregnancy are noteworthy and written in such a way as to create a lasting impression.

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SYNOPSIS OF OBSTETRICS. Jennings C. Litzenberg, M.D.,F.A.C.S., Professor Emeritus of Obstetrics and Gynecology, University of Minnesota Medical School, Minneapolis. 3rd ed. 416 pages. Illus. St. Louis: C. V. Mosby Company, 1947. Price $5.50.

The *Synopsis of Obstetrics* is a concise, orderly résumé of an ordinarily detailed and comprehensive branch of medicine. The ability to be brief and yet complete in his subject springs from Dr. Litzenberg's long and successful teaching career. This review of obstetrics should prove of considerable help to the student of the subject and to the older practitioner, as well, who for one reason or another has need for a quick, comprehensive coverage of the field.

The obstetrical specialty is covered with marked brevity. This should not be construed as a criticism of the book, however, for, as the title suggests, it is meant to be no more than a synopsis. For more complete coverage of the various subjects, one should consult the standard works on obstetrics or the current literature. A useful addition to the book would have been a bibliography at the end of each chapter to help those students desiring to expand their knowledge of the items skimmed over hurriedly in the text.

Several portions of the book have been rewritten or additions have been made. The various laboratory methods used in diagnosis of pregnancy are discussed. The following subjects have been expanded: the relief of pain in labor, diabetes in pregnancy, and puerperal infections, their treatment with the sulfonamides and antibiotics. A rather complete review of the relationship of the Rh factor to obstetrics is included in this, the latest edition of the *Synopsis of Obstetrics.*

A. F. H.

DISEASES OF CHILDREN'S EYES. James Hamilton Doggart, M.A., M.D. (Cantab), F.R.C.S. (Eng.), London, England. 282 pages. Illus. Price, $10.00. St. Louis: C. V. Mosby Company, 1947.

The author of this book has covered quite completely the subject from the embryology and anatomy to the many conditions encountered in adults' as well as in children's eyes. The individual style in this text is direct, concise, and very understandable. There are 282 pages of text and 210 illustrations, thirty-two of which are colored plates. These illustrations have been freely borrowed from the best British ophthalmic works and enhance the value of the book. The chapters are well arranged and, following most chapters, is a short bibliography of British references.

The text, as the author states, is his personal view of the subject matter. In these times when texts are padded volumes of every author's views, it is refreshing to find one with the temerity to write his own ideas in his own fashion and let the reader accept it as the frank expression of the author's opinion. While exceptions will be taken by many, as for example the chapters on treatment, no two would agree anyway.

As the reader will have to admit, the author has crammed more ophthalmological information into 282 pages in concise readable form than has been done any other modern treatise on the subject.

John C. Brown, M.D.

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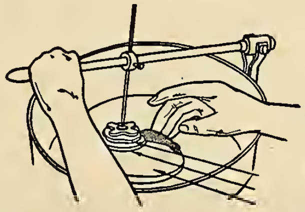

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Volume 30 **December, 1947** **No. 12**

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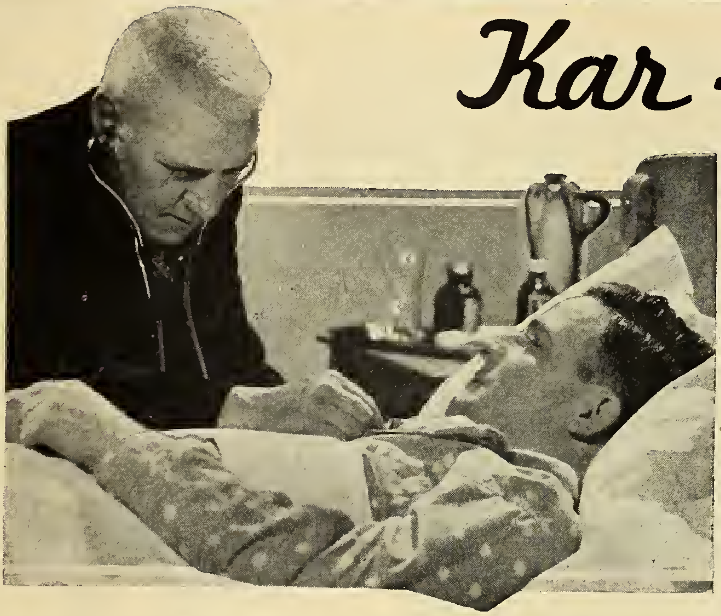

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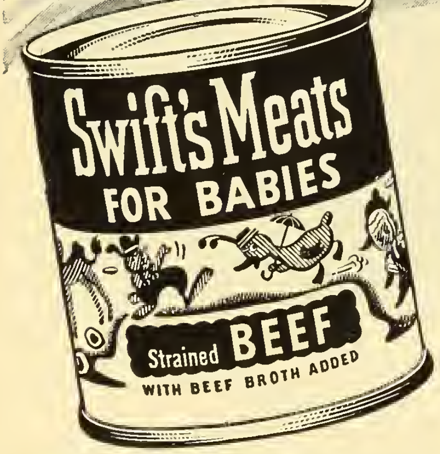

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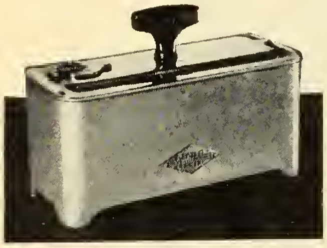

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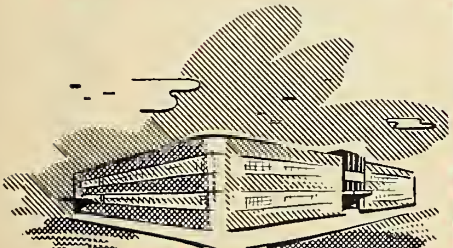

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*Goodman, L., and Gilman, A.: The Pharmacological Basis of Therapeutics, New York, The Macmillan Company, 1941, p. 433.

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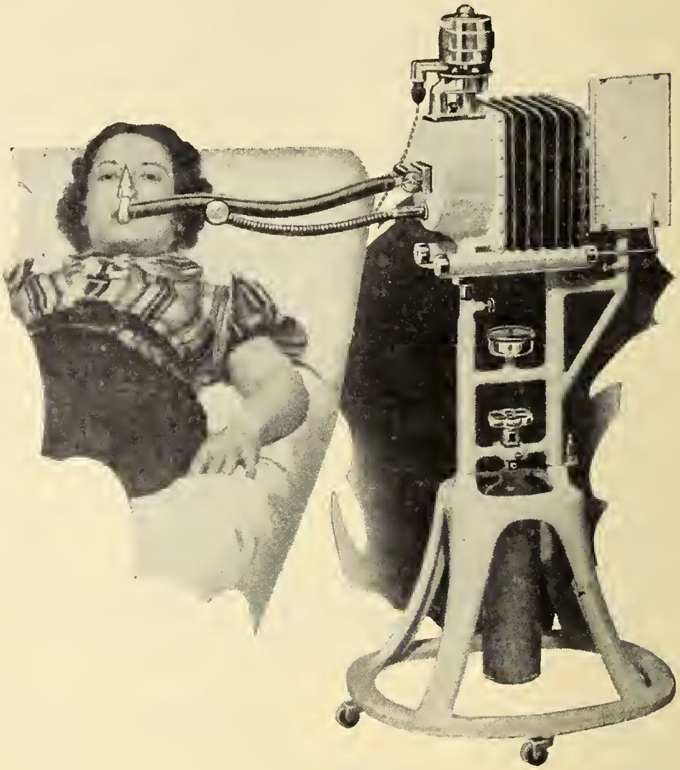

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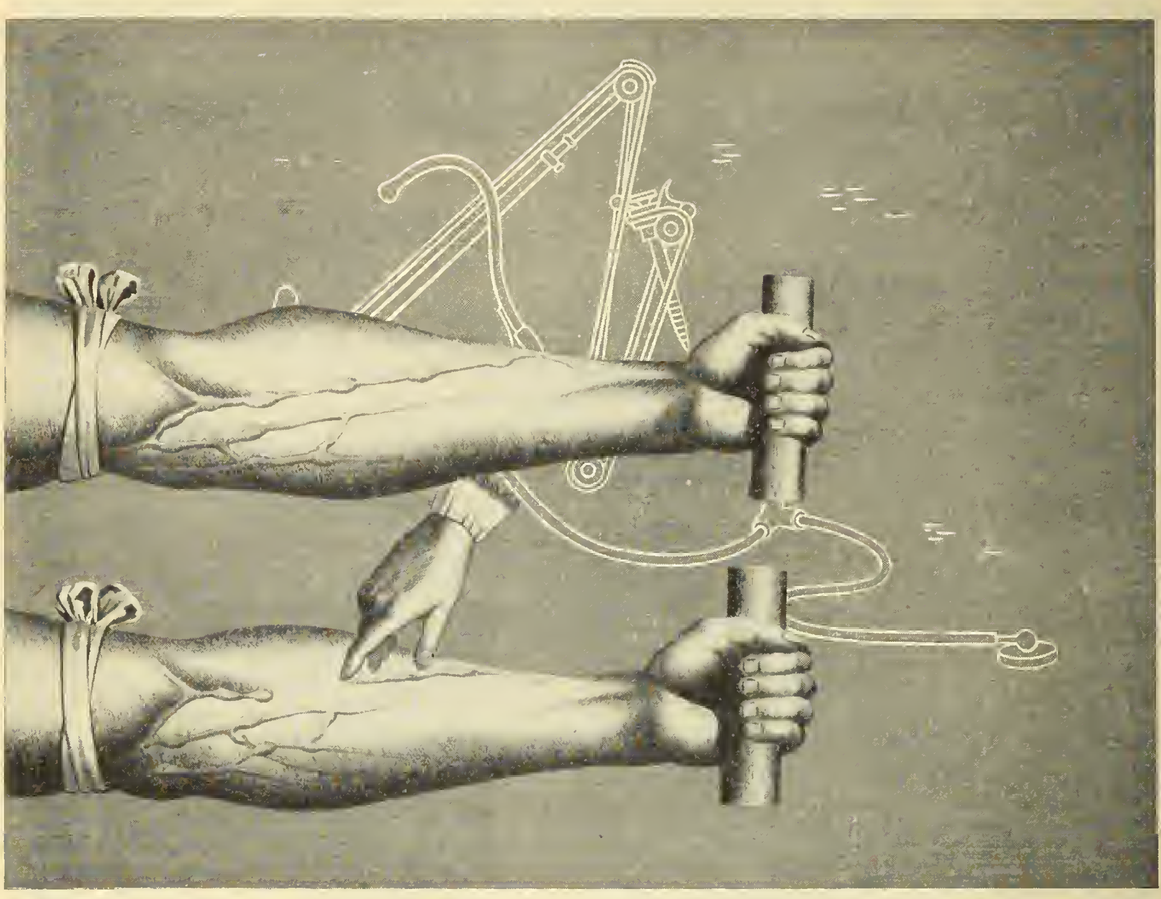

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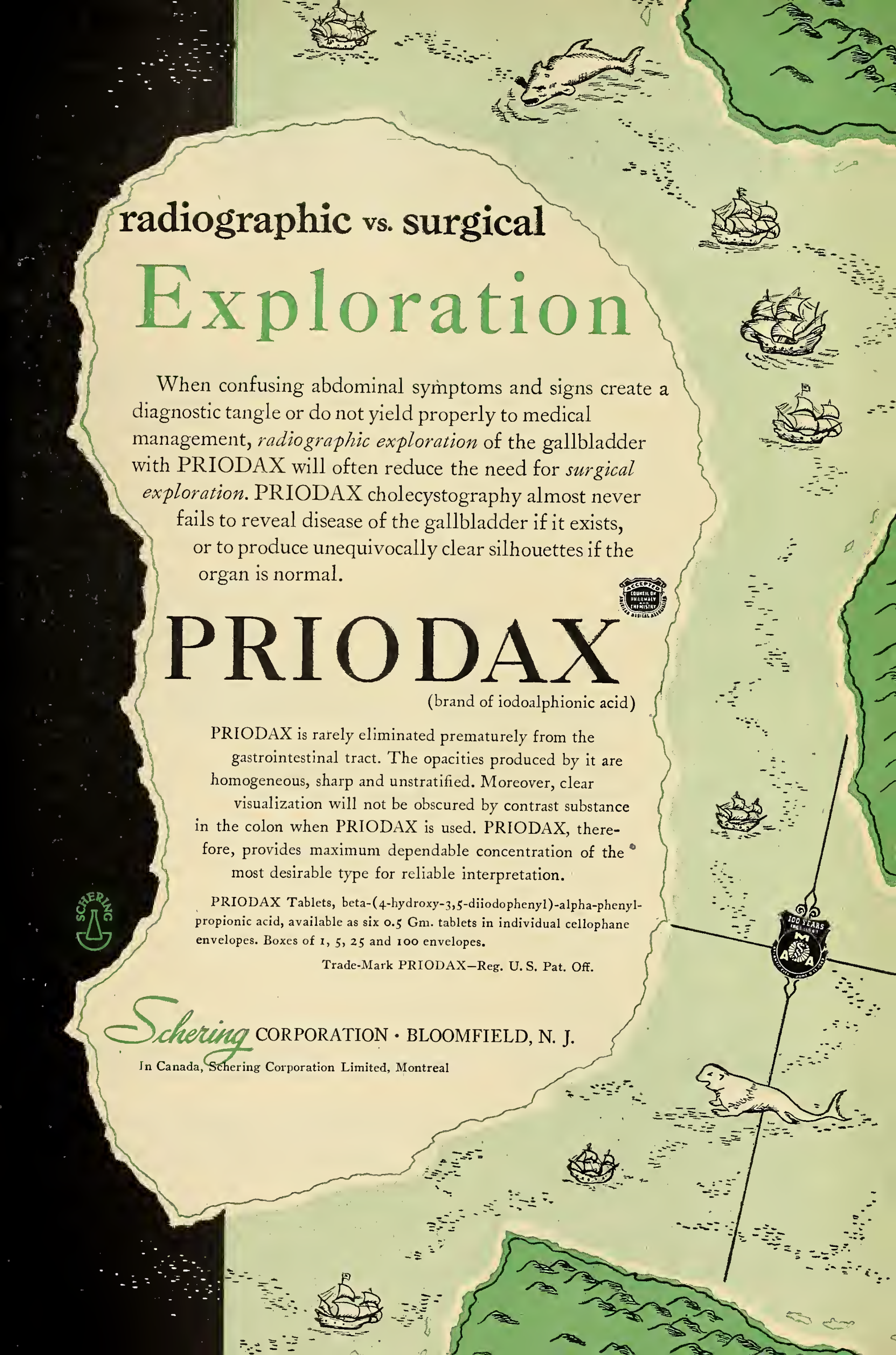

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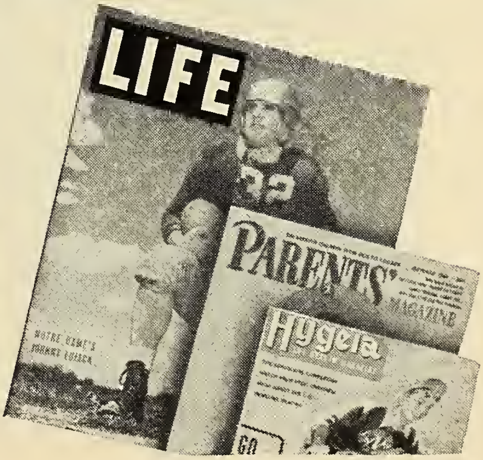

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Minnesota Medicine

Journal of the Minnesota State Medical Association, Southern Minnesota Medical Association, Northern Minnesota Medical Association, Minnesota Academy of Medicine and Minneapolis Surgical Society

Volume 30 December, 1947 No. 12

THE FENESTRATION OPERATION FOR OTOSCLEROSIS

GEORGE E. SHAMBAUGH, JR., M.D.

Chicago, Illinois

NINE years ago a new operation was described for restoring hearing in certain cases of progressive deafness. From a small begining beset with difficulties, the fenestration operation has become one of the major advances in surgery of recent years.

The principle of the fenestration operation is simple. Otosclerosis, the most important cause for progressive deafness in early and middle adult life, blocks the conduction of sound to the inner ear by a formation of spongy bone in the oval window. The fenestration operation removes the block by making a new window into the labyrinth and connecting it with the tympanic membrane by a plastic skin flap.

The principle of the fenestration operation was thought of many years ago, but the early attempts to restore hearing in otosclerosis failed, for the new window always closed by new bone formation following operation. The first successful operation was by a French otologist some twenty years ago, whose complicated several-stage procedure was simplified nine years ago by Lempert in the one-stage fenestration operation.

As with the earlier operations, bony closure of the new window was the chief obstacle to the fenestration operation. At first 50 per cent or more of the fenestrae closed within a few months after operation. This difficulty has been overcome largely from knowledge gained by animal experiments.

The six factors that were found to influence new bone formation at the fenestra may be applicable to other operations on bone, and are, therefore, of general interest.

First, we observed in our animal experiments that particles of bone dust, even microscopic in size, exert a powerful stimulus to osteogenesis, new bone forming rapidly around such particles. The first requisite in making a fenestra that will remain open is to make a clean window entirely free from any particles of bone dust.

Second, we found that the middle layer of bone of the labyrinthine capsule, called the enchondral layer because it comes from the fetal cartilage, is much less active in forming new bone than the outer periosteal layer or the innermost layer of endosteal bone. The second requisite in preventing closure is to expose the inert enchondral layer as far as possible around the new window.

Third, we demonstrated that stratified squamous epithelium lying close to bone inhibits osteogenesis. Therefore, the fenestra should be covered with the thinnest possible skin flap closely applied to the margins of the fenestra.

Fourth, we proved that trauma to the endosteum that lines the labyrinth stimulates osteogenesis. In making the fenestra great care must be taken not to scrape or strip the endosteum within the labyrinth.

Fifth, we discovered that bone polished with a hard gold burnishing burr rarely shows osteogenesis from the polished surface.

Sixth, we confirmed the known fact that fibrosis tends to be followed by osteogenesis in bone injuries. Accordingly fibrosis must be kept to a

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Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, June 30, 1947.

minimum by controlling hemorrhage, preventing infection and minimizing inflammatory reaction due to tissue trauma.

The application of these six factors demonstrated by our animal experiments to the fenestration operation has resulted in reducing bony closures to less than 3 per cent of operations followed for more than two years.

This does not mean that nearly every patient operated upon experiences a good result, for there are still problems to be overcome. But it does mean that once the patient experiences a good hearing improvement he may expect to keep it permanently, with the technique that is now being used.

The risks of the fenestration operation have proved to be slight, despite the proximity to the facial nerve, to the dura of the middle and posterior cranial fossa, and to the sigmoid portion of the lateral sinus. In more than 1,600 operations over a nine-year period we have had no deaths and no serious complication. Temporary paralysis of the facial nerve is the most frequent complication. Dizziness lasting a few weeks, and in some cases persisting in a mild form for as long as two years, is the most annoying symptom following operation.

The careful selection of cases for the operation is very important, for the outcome will depend as much upon the selection of cases as upon the correct surgical technique properly carried out.

The fenestration operation is first of all an elective operation, and the patient must be in good health.

The tympanic membranes must be intact and within normal limits.

Above all, the cochlear nerve function must be good for the speech frequencies as measured by the bone-conduction hearing tests. Making a new window cannot improve the hearing if the hearing nerve does not respond.

According to the bone-conduction hearing tests we classify each patient and give him an approximate prognosis with regard to his chances of regaining practical hearing.

The ideal "Class A" candidate for the fenestration has normal hearing by bone conduction for all three of the speech tones of 512, 1,024 and 2,048 vibrations per second. Such a patient has at least eight chances out of ten of regaining permanent hearing sufficient to do without a hearing aid.

The suitable but not ideal "Class B" case has normal hearing for all but one of the speech frequencies by bone conduction. He has about five or six chances out of ten of a permanent good hearing result.

The borderline "Class C" case shows a bone conduction curve below normal for two or three of the speech frequencies. He has only about one chance out of ten of a good hearing improvement, and as a rule such patients are encouraged to use a hearing aid rather than to be operated upon.

In conclusion, the fenestration operation offers the victim of progressive deafness from otosclerosis a chance to regain sufficient hearing to do without a hearing aid. The prognosis in a particular case depends upon the condition of the auditory nerve as measured by the bone-conduction hearing tests for the speech frequencies.

If the operation is not successful, the hearing in the operated ear may be improved too little to be of value, or it may remain the same as before operation, or, in about one per cent of cases, the hearing may be worse in the operated ear. For this reason the poorer hearing ear is selected for operation.

At the present time, with the technique that is being used, the ideal candidate for the fenestration operation has eight chances out of ten of regaining and keeping practical hearing.

FBI CHECKS STATE MEDICINE

One of the most startling misuses of public funds in many years was disclosed last week by Congressman Harness of Indiana who divulged that the FBI has commenced an investigation of Federal agencies illegally propagandizing for socialized medicine.

The Bureau of Research and Statistics of the Social Security Board was characterized by Harness as the "nerve center of socialized medicine propaganda for the entire world." Harness declared that if the medical profession "can be taken over by the Federal Government and forged into a new and gigantic health bureaucracy, it would only be a question of time until Washington likewise moved into the field of education, religion, the press and radio."

Bureaus are charged by law with responsibility for administering legislation enacted by Congress, but the spending of huge funds by government agencies to "pressure" the enactment of legislation is a relatively new and alarming development. Since the first of this year various Federal agencies, according to Congressman Harness, have spent nearly 75 million dollars for publicity and propaganda work.—*California Feature Service,* October 6, 1947.

FOLLOW-UP OF ABNORMAL PULMONARY FINDINGS OBSERVED IN MASS CHEST X-RAY SURVEYS

HILBERT MARK, M.D., M.P.H.
Director, Division of Tuberculosis, Minnesota Department of Health
Minneapolis, Minnesota

SURVEY FILMING is only a means of screening the apparently healthy population into two groups: (1) those persons with essentially negative chests and (2) those in whom the project x-rays give an impression of some abnormality.

Further examinations of the individuals in group 2 and adequate clinical evaluations are required to sort out those in need of medical supervision. All examinees who require such evaluation are referred back to their preferred physician. Although every pulmonary shadow is not tuberculosis, yet tuberculosis should be ruled in or out as soon as possible. Primary tumors of the lung and other non-tuberculous pulmonary diseases may simulate tuberculosis. It is possible to diagnose early bronchiogenic tumors, benign or malignant, by adequate follow-up of localized emphysemas which appear as a result of partial obstruction of a bronchus. This could lead to an earlier surgical attack on this type of tumor. Of course, there are other causes of localized distention of the lung.

The prompt clinical attention of the first physician to see the patient after the survey report of a possible pathological condition is a serious responsibility. In many of these cases the determination of a correct diagnosis may require varied diagnostic tests.

It can be said, therefore, that the clinical evaluation should determine the following:

1. Definite diagnosis and whether the disease is communicable
2. Extent of the disease and whether it is acute or chronic
3. Prognosis and determination of therapeutic procedure
4. If tuberculosis, disposition of the patient and whether his condition requires hospital or sanatorium care or whether he may continue under local medical supervision.

Since tuberculosis should be ruled in or out without undue delay, a complete clinical study should include the following:

1. *History.*—As the abnormality found will vary from very recent to very old, the degree and variety of symptoms present will also vary widely from no apparent to marked symptoms. Past history should be checked for tuberculosis exposure, hemoptysis, extended colds and coughs, malaise, et cetera.

Occupational history may be exceedingly important in the differential diagnosis. The results of previous tuberculin tests and roentgen examinations should be obtained in detail and verified.

2. *Physical Examination.*—A complete physical examination should be made, and although a chest x-ray has been obtained, the examination of the chest should not be omitted. Temperaure recordings at different times of day and sedimentation rates should be obtained. Special attention should be given to the determination of the presence or absence of increased temperature, fatigue, or loss of weight.

3. *Tuberculin Tests.*—To be of value, this test must be given correctly with potent material and then interpreted correctly. It is then an extremely valuable test in establishing the diagnosis of the case. Usually, the single test with 0.1 cc. of a 1:1000 dilution of old tuberculin (0.1 mgm) will suffice. A negative test on several trials will rule out tuberculosis except under the following conditions:

- (a) fulminating cases when the ability to react to the antigen is lost
- (b) overwhelming miliary infections
- (c) recent cases when the infection has not been present long enough to produce the allergic phenomenon
- (d) following some infectious diseases such as measles when the allergic respone is temporarily lost.

4. *Sputum Tests*—It is exceedingly important that a thorough search be made for tubercle bacilli. The presence of proved tubercle bacilli establishes the diagnosis. When sputum is present the initial examination can be by direct smear, but if no bacilli are found on direct smear, cultural studies should be made.

TABLE I. GUIDE FOR DISPOSITION OF PERSONS DIAGNOSED AS TUBERCULOUS*

Group	Tubercle Bacilli	Cavity on X-Ray Film	Changes on X-Ray Film	Tuberculin Test (1:1000 O.T.) Intracutaneous	Principal Symptoms: Temperature, Fatigue, or Weight Loss	Disposition of Case		
		+ Present S Suspect 0 Absent		+ Reactor 0 Non-Reactor	+ Any one or all Present 0 All Absent	Sanatorium Care	Sanatorium Observation If Beds Are Available	Clinic or **Private Phys.** Local Medical Supervision
1.	Sputum Culture Negative and Gastric Culture Negative	0 or +		0	0 or +			X
2.		0		+	0			X
3.		0		+	+			X
4.		S or +		+	0 or +		X	
5.	No Sputum and Gastric Culture Positive	0		+	0		X	
6.		S		+	0		X	
7.	Sputum Culture Negative and Gastric Culture Positive	S		+	+	X		
8.		+		+	0 or +	X		
9.	Sputum, Smear or Culture Positive	0 or +		0 or +	0 or +	X		

*Suggested modification of guide proposed by Hilleboe & Holm published in December 6, 1946, issue of **Public Health Reports.**

In the absence of expectoration, a gastric lavage of the fasting stomach is indicated in order to obtain the required specimen.

The work of a number of bacteriologists has shown that the gastric acid or enzymes or both have a deleterious effect on the tubercle bacilli. A twenty-four-hour delay markedly reduces the chance of recovery of viable tubercle bacilli. Both sputum and gastric specimens should be mailed to an accredited official or private laboratory without delay.

If there are beds available in the sanatorium, it is better to have the patient admitted to the institution so that the gastric lavage can be done early in the morning before the patient has had an opportunity to move about or to drink. The specimen obtained can then also be handled promptly and cultures inoculated while the tubercle bacilli, if present, are still viable.

5. *Serial and Special X-Ray Studies.*—If possible, previous chest films should be obtained and used in review. These examinations may be indicated to determine the extent and position of the lesion. Changes or lack of changes of the pulmonary lesions will aid in determining whether the disease is acute or chronic and whether the lesion is stable, retrogressive, or progressive.

If the diagnosis is tuberculosis, the next consideration is the disposition of the patient. To determine this the physician should consider the status of the disease, the presence or absence of tubercle bacilli, the extent and character of the pulmonary lesion as revealed by the roentgenograms, and the presence or absence of cavities.

It is hoped that the clinicians will submit sputum or gastric specimens periodically to the Health Department Laboratories on *all patients* remaining home under medical supervision.

Contacts of positive sputum cases should be given the Mantoux test. If there is no reaction, the test should be repeated in two months and again in four months. If no reaction, further follow-up is not required. If the contact reacts, he should be x-rayed at the time of the Mantoux reaction, and rerayed in six months. If the x-ray examinations are negative, reray yearly unless the contacts are children, then reray at the age of twelve, and annually thereafter.

Summary

1. The necessity for a complete clinical evaluation by the private physician is discussed. Recommendations are made of the points to consider in making such an evaluation.

2. A modification of the Guide for Disposition of Persons with Lesions Diagnosed as Tuberculosis as outlined by Hilleboe and Holm is presented.

ACUTE PERFORATED GASTRIC AND DUODENAL ULCER

An Eighteen-Year Survey

DONALD C. MacKINNON, M.D., F.A.C.S.
Minneapolis, Minnesota

THE general interest in acute perforated gastric and duodenal ulcer is indicated by the tremendous number of recorded observations, and the excellent reviews of this subject reported in the literature. Most of the publications disclose an obvious dissatisfaction with the high mortality rate in this acute abdominal catastrophy. Furthermore, there is a unified effort to correct the deplorably high mortality by outlining treatment along certain definite and well-established principles.

During the first three decades of the twentieth century, the mortality in perforated ulcers decreased considerably, according to DeBakey,[6] whereas, during the fourth decade, it diminished only 2.4 per cent with an operative mortality during that period of 23.4 per cent. The operative mortality figures of Sallick[28] (10.8 per cent in seventy-four cases), Berson[3] (15.2 per cent in 151 cases), and Black and Blackford[4] (11.8 per cent in ninety-three cases) are more favorable. According to DeBakey,[6] the lowest mortality rates have been reported in the smaller series of cases.

With refinements in surgical technique, anesthesia, chemotherapy and preoperative and postoperative care, more encouraging results should be recorded in the future. However, there has been very little published during the last few years in support of this contention, except in the smaller series of cases. Graham[12,13] reported fifty-one cases with one death, but when his series was extended to 111 cases, the operative mortality rate was 6.3 per cent. From the United States Navy, Lyons and Sinclair[23] reported one death in twenty-two Seabees. The recent figures of Baritell[2] (1.1 per cent operative mortality in eighty-eight cases) were unique. Whether these figures can be approached in the larger series, where the mortality risk is increased by including more individuals who are likely to develop cardiac, renal, and pulmonary complications, is problematic. Only by repeated analyses and reviews of this subject can lowered mortality rates be revealed and improved methods of procedure be developed.

During the past six years, the members of the surgical staff of the Minneapolis General Hospital have been impressed with an apparent decrease in the mortality from acute perforated gastric and duodenal ulcers operated upon in that hospital. In order to prove this impression, the present study was undertaken. Furthermore, a more complete interpretation of our changes in therapy and an opportunity to compare the statistical aspects of our series with other collected series would then be possible.

Source of Material

This study includes all the cases of acute perforated gastric and duodenal ulcers in which operation was performed at the Minneapolis General Hospital during an eighteen-year period from 1929 to 1946, inclusive. This represents a series of 176 cases. These patients were indigent, in a poor physical, economic, and social status, quite unlike patients in private practice. The emergency operations were performed in thirty-seven instances by ten visiting staff surgeons. One hundred thirty-nine patients were operated upon by thirty-four senior resident surgeons during their final six-month training period of the three-year fellowship in general surgery. The operations performed by the visiting staff were done, for the most part, during the first three years of the series before postgraduate training was well established in this hospital.

Only the acute perforated gastric and duodenal ulcers treated surgically were included. Penetrating ulcers and elderly moribund individuals who were admitted to the medical service with a diagnosis of coronary thrombosis, or other incorrect diagnoses, showing perforated ulcers at necropsy, were excluded. Three patients treated conservatively were excluded. Two of these died and the diagnosis was verified at necropsy. One recovered and was operated on for a second perforation three years later. One young woman was excluded whose appendix was removed and the overlooked perforated duodenal ulcer was discovered at necropsy.

From the Minneapolis General Hospital and the Department of Surgery, University of Minnesota Medical School, Minneapolis, Minnesota.

Presented before the Minneapolis Surgical Society, April 3, 1947.

TABLE I. MORTALITY FOR THE SERIES AND ACCORDING TO SIX-YEAR AND NINE-YEAR PERIODS (176 CASES)

Period	No. Cases	No. Deaths	Mortality Per cent
1929-1946	176	38	21.6
1929-1934	49	12	24.5
1935-1940	63	21	33.3
1941-1946	64	5	7.8
1929-1937	82	24	29.3
1938-1946	94	14	14.9

TABLE II. MORTALITY ACCORDING TO THE AGE IN OUR SERIES AND IN THE COLLECTED SERIES[6]

Age Decades	Our Cases (176)			Collected Cases (4,147)
	No. Cases	No. Deaths	Mortality Per cent	Mortality Per cent
10-19	2	0	0.0	14.3
20-29	26	1	3.8	12.2
30-39	40	3	7.5	18.9
40-49	46	10	21.7	28.0
50-59	39	12	30.7	40.8
60-69	17	9	52.9	55.3
70-79	6	3	50.0	53.8

TABLE III. MORTALITY ACCORDING TO SEASONS (176 CASES)

Season	No. Cases	No. Deaths	Mortality Per cent
Winter	47	10	21.3
Spring	55	15	27.3
Summer	33	4	12.1
Autumn	41	9	21.9

Table I shows the mortality rates for the entire series: three consecutive periods of six years or two consecutive periods of nine years. The operative mortality rate of 21.6 per cent approximates the figure of 23.4 per cent in the collected series of 15,340 cases reported by DeBakey.[6] The higher mortality rate in the second six-year period is due to a greater number of poor risk patients operated upon during that period. A more marked reduction in the mortality rate is found in the last six years of our series (7.8 per cent in sixty-four cases), than in the last nine years of the series (14.9 per cent in ninety-four cases). Factors contributing to this reduction will be discussed later in this report. At present, it is of interest to correlate various factors of the disease with the death rate in order to determine their importance in the immediate prognosis.

Age

Age has long been recognized as being an important prognostic factor. In this series the range was from fifteen to seventy-six years. The average age of the entire series was 44.3 years. The average age of the survivors was 41.8 years and of those who died 53.5 years. The patients of the entire series were in a significantly older age group, 35 per cent being fifty years or older. According to six-year periods, the number of patients over fifty years of age was 22.4 per cent for the first period, 38.1 per cent for the second period and 39.1 per cent for the third period. These figures show that from the standpoint of age, the greatest number of poor risk patients were in the last six-year period when our mortality was the lowest, making our figure of 7.8 per cent statistically significant. Table II shows a correlation between the mortality incidence and age according to decades in our cases and the collected series.[6] There is a definite increase in the mortality with each succeeding decade. These figures do not differ markedly from those already reported by Graves,[14] Judine,[18] and DeBakey.[6] Their exceedingly high mortality incidence of 33.3 to 50 per cent in individuals over fifty years clearly indicates the seriousness of the disease in people of that age group.

Sex

In uncomplicated ulcer there is a ratio of six males to one female. The incidence of perforation is much greater in the male, exceeding this ratio by four or five times. In our series there were 171 males and five females, a ratio of 34 to 1. There were no deaths among the females. DeBakey[6] reported a mortality rate of 43.9 per cent in 474 females and 25.7 per cent in 2,152 males, indicating that the prognosis is not as favorable in the female sex. Possibly this can be explained by the fact that women are more likely to develop gastric rather than duodenal perforations, which, as will be shown later, usually result in a higher mortality rate.

Seasonal Incidence

Ulcer activity is considered to be greatest during the spring and autumn seasons. Table III shows the higher incidence of perforation in the spring and autumn, but also high during the winter, with the lowest incidence during the summer season. Ulfelder and Allen[35] correlated the mortality incidence with the season in which upper respiratory infections were frequent and found a close relationship. In late autumn, winter, and early spring respiratory infections are frequent in Minnesota. In our series the mortality incidence was highest during these seasons and lowest during the summer months.

Previous History

A correlation between mortality and the presence or absence of either a positive or a suggestive history of ulcer did not disclose a significant relationship in our series. There was a rather high incidence of some type of ulcer distress as shown by the fact that 21.5 per cent of our patients gave a positive history of ulcer for a year or longer, 59.6 per cent gave a suggestive history of ulcer for a few weeks to several years, 17 per cent gave no history of ulcer, and in three cases the history of ulcer was unspecified. All patients with a positive and suggestive history of ulcer had carelessly and stupidly neglected adequate medical therapy, in many instances having resorted at irregular intervals to alkalies or food for relief of their symptoms. Emphasis must again be placed upon the fact that these patients were indigent; most of them from the lower social and economic levels of society. Some were chronic alcoholics, others were transient and homeless, so there should be little difficulty understanding that adequate medical management in such individuals is often unsuccessful and occasionally impracticable. Though perforation can occur in the presence of an adequate medical regimen, as observed in a few cases reported by Eliason and Ebeling,[8] it did not occur under similar circumstances in any of our cases. There were three patients with recurrent perforations in our series. The original perforations were treated elsewhere in two patients. In one patient, a simple closure was performed one year prior to the second perforation. In the second patient, the initial perforation was closed and a gastroenterostomy was performed; seven years later this patient had a perforated gastrojejunal ulcer. The third case was of interest because the patient had a perforation three times at three-year intervals. The first perforation was treated conservatively, and the last two were duodenal perforations treated by simple closure. Subsequently, this patient had a subtotal gastric resection.

TABLE IV. MORTALITY ACCORDING TO THE PREOPERATIVE TIME INTERVAL IN OUR SERIES AND IN THE COLLECTED SERIES[6]

Time Interval Hours	Our Cases (176) No. Cases	No. Deaths	Mortality Per cent	Collected Cases (7,683) Mortality Per cent
0-6	92	10	10.9	10.5
7-12	59	14	23.7	21.4
13-18	14	6	42.8	38.5
19-24	5	4	80.0	62.4
Over 24	5	4	80.0	61.5
Unspecified	1	0	0.0	0.0

Time of Perforation

In the literature, reference is made to the causative relationship of activity, trauma, and occupation, to perforation. Little attention has been given to the time perforation occurs in relation to ordinary mealtime. There is a general conception that perforation often takes place during or after a heavy meal. In our series it was possible to determine the hour of perforation in 172 cases. In 121 cases (70.3 per cent) perforations occurred between 9 a.m. and noon, 3 p.m. and 6 p.m., and 9 p.m. and 6 a.m., with slightly more than 50 per cent occurring during the latter period or night hours. This figure might even be higher if one could assume that some of the twenty-five patients whose perforations occurred during the dinner and supper hours had not eaten. This analysis is only presumptive evidence that perforation occurred more often during the periods when highly acid gastric secretions were less likely to be neutralized by food. In our series, only four patients definitely had a perforation while eating, six immediately after eating, one after drinking coffee, two after drinking beer, and two a few hours after a gastrointestinal x-ray study.

Preoperative Time Interval

Another extremely important factor, contributing to the high mortality rate, is the lapse of time between perforation and operation. The rapid rise in mortality rate is clearly demonstrated in Table IV where our figures are compared with DeBakey's[6] collected series. The mortality doubles, approximately, with the lapse of each succeeding six-hour interval up to twenty-four hours. In our series the operation was performed during the first twelve hours in 85.7 per cent of the cases, indicating that there was little delay in operating upon these patients. According to six-year periods, the number of patients with perforations over twelve hours old before operation was 14.2 per cent for the first period, 25.4 per cent for the second period, and 19.1 per cent for the third period. The greatest number of poor risk patients were in the second period when our mortality was the highest. There were more patients with perforations over twelve hours in the last period when our mortality was the lowest, than in the first period. Therefore, from the standpoint of the preoperative time interval, a relatively large number of poor risk patients were operated upon during the last six years, making our mortality rate of 7.8 per cent significant for that period.

The preoperative time interval is uncontrollable until the patient is within the jurisdiction of the medical attendant, when it then becomes a factor directly under his control. This was shown in one of our deaths which was attributed, in part, to unnecessary delay. A thirty-three-year-old man was admitted three hours after first noticing symptoms of perforation but he was not operated upon until six hours more had elapsed. It is our policy to operate upon these patients immediately after making the diagnosis, which usually can be determined quickly and easily. Scoutter[29] has shown that true shock is infrequent in these cases. This was also true in our patients where it was found rarely in a few late cases. Therefore, a short period of preoperative preparation ordinarily can be accomplished. We are also in accord with Olson and Norgore,[27] and Graham,[12] who believe that a sufficient delay is justifiable in the late case to correct the secondary manifestations of perforation, such as shock, and fluid and biochemical depletions.

Though there is a tendency for the perforation to become sealed in late cases, this fact cannot be determined definitely with any degree of accuracy. Only three of our patients were treated conservatively and only one recovered. These three were seen late and were admitted in such poor condition that they were inoperable, or in sufficiently good condition to indicate that the perforation may have been sealed and recovery might have been taken place. Baritell[2] treated five patients conservatively who were seen late when their signs and symptoms were subsiding, with recovery in all cases. He emphasizes careful evaluation, constant observation, and surgical intervention only when there were signs indicating a relapse. Ulfelder and Allen[35] agree with Wangensteen[37] that nonoperative therapy should be considered in the older age group seen twelve hours after onset and showing signs of localization. Sherman[32] reported a 50 per cent mortality in fifty patients not submitted to operation; this group was not analyzed so the high mortality was equivocal. Visick[36] reported two deaths in fourteen unselected patients treated conservatively. Taylor[34] bases surgical intervention on the degree of leakage that takes place, recommending conservative management in the early perforations and operation in the late cases. He reported four deaths in twenty-eight patients treated conservatively. Unquestionably, patients admitted to the hospital after the optimum time for operation has passed, and who are in poor physical condition, constitute a real problem in therapy and surgical judgment, as shown by two of our patients who died of profound shock during and immediately after the operation. We now believe that in the late case the patient should have a reasonable chance to survive the operation before operation is undertaken.

Pneumoperitoneum

The scope of this report does not include a detailed study of the symptoms and signs which are characteristic and helpful in making the diagnosis of perforated ulcer. Roentgen-ray evidence of free air under the diaphragm in the upright position, or between the liver and the chest wall in the left lateral decubitus position is practically pathognomonic of a perforated viscus.

Due to improved x-ray technique, the accuracy of this procedure has improved noticeably during the last ten years of our survey. Pneumoperitoneum is not present in all cases, especially when the perforation is small, of short duration, or when the air bubble becomes pocketed by adhesions in a subhepatic position. The injection of air through an indwelling catheter in the stomach to increase the accuracy of this diagnostic aid was not practiced. Intraperitoneal free air was observed in the usual locations by roentgen-ray examination in only 55.6 per cent of our patients. It was not demonstrated in one-fourth of the cases, and in the remaining patients an x-ray was not taken or was unsatisfactory. The literature contains numerous reports in which pneumoperitoneum was demonstrated in from 50 per cent, as shown by McCabe and Mersheimer,[25] to 95 per cent of the cases, as reported by Shallow.[30] In the absence of pneumoperitoneum, an elevated serum amylase, as shown by Elman,[9] is helpful in distinguishing acute pancreatitis. Serum amylase determinations were done shortly after admission to the hospital in only eight of our patients, and in two cases they were abnormally high. Needle aspiration of the peritoneal cavity was done occasionally. The diagnostic value of this procedure has been reported by Steinberg.[33] If a small amount of methylene blue given orally can be retrieved by peritoneal aspiration, a perforation is present. Recently, this procedure has been used in the cases showing no air under the diaphragm. When these procedures are positive, they are valuable diagnostic aids. When they are negative, they may cause further confusion and unnecessary delay in which valuable time is lost prior to surgical intervention. The diagnosis is not difficult in most cases and must be interpreted in the light of the characteristic history and physical findings.

Leukocyte Count

The average initial leukocyte count performed on admission to the hospital was 14,250. The range was from 3,200 to 29,800. In some instances there was no leukocytosis. Among the deaths there were seven cases with an initial leukopenia of counts below 6,350. In perforation of less than twelve hours' duration, the average initial leukocyte count in 118 patients who survived was 14,550, and in sixteen deaths was 11,950. When perforation had been present more than twelve hours the leukocyte count was not of prognostic value—for the average count in those who survived was 14,600 and in those who died 14,050. Berson[3] reports a mortality of 52.4 per cent in patients with a leukocyte count under 10,000. From these figures a normal leukocyte count or an initial leukopenia may indicate a grave prognosis.

Anesthesia

There is a controversy regarding the anesthetic of choice in operating for perforated gastric and duodenal ulcer. Sallick[28] and McCreery[26] found a lower mortality in those operated upon under general anesthesia, while Fallis,[10] Shawan,[31] and Judine[18] found mortality rates from two to four times as great under general as under spinal anesthesia. Baritell,[2] in his spectacular series of eighty-eight cases with a 1.1 per cent mortality rate, used spinal anesthesia routinely. In a series of 1,776 collected cases, DeBakey[6] reported a mortality under general anesthesia of 29.9 per cent, under spinal anesthesia of 17 per cent, and under local anesthesia of 52.8 per cent. The higher mortality rate in the local anesthetic group can be explained by the fact that local was the anesthetic of choice in the late and originally poor risk patients.

TABLE V. MORTALITY ACCORDING TO ANESTHESIA (176 CASES)

Anesthetic	No. Cases	No. Deaths	Mortality Per cent
Ether	9	1	11.1
Ethylene ether	65	16	24.6
Cyclopropane ether	32	6	18.8
Pentothal induction, cyclopropane ether	5	0	0.0
Pentothal induction, cyclopropane or nitrous oxide oxygen, curare	27	2	7.4
Total general anesthetics	138	25	18.1
Spinal	22	7	31.8
Spinal, Ethylene ether	7	2	28.6
Total spinal analgesia	29	9	31.0
Local	2	1	50.0
Local, Ethylene ether	3	3	100.0
Local, Pentothal	4	0	0.0
Total local analgesia	9	4	44.4

Table V shows a large variety of general, spinal, and local anesthetics, and combinations of anesthetics used in our patients. They actually ran the gamut of anesthetic agents from the days of drop ether. This is a startling example of the changing trends in anesthesia and of the new discoveries constantly being made to find the most satisfactory and safest anesthetic or combination of anesthetic agents for abdominal operations. In our series the mortality incidence for the general anesthetic group was 18.1 per cent, spinal analgesia group 31 per cent, and local analgesia group 44.4 per cent. Supplementary anesthesia was frequently used in the spinal and local groups. Local analgesia was used in the poor risk patients. In this hospital spinal analgesia has been used frequently in lower abdominal operations, although it has never been popular in upper abdominal operations as shown by the relatively few times it was employed in our cases. The newer general anesthetic agents have definitely contributed to our lower mortality rate during the last six-year period. A combination of these agents recommended by Knight,[20] with the administration of pentothal induction, cyclopropane or 70 per cent nitrous oxide and oxygen, and the injection of curare intravenously, pro-

TABLE VI. MORTALITY ACCORDING TO THE LOCATION OF THE PERFORATION IN OUR SERIES AND THE COLLECTED SERIES[6]

Location	Our Cases (176)			Collected Cases (4,825)
	No. Cases	No. Deaths	Mortality Per cent	Mortality Per cent
Gastric	64	12	18.7	33.3
Duodenal	103	23	22.3	21.1
Pyloric	8	2	25.0	22.2
Gastrojejunal	1	1	100.0	——

duces a pleasant induction, adequate anesthesia with a high concentration of oxygen, excellent relaxation, and a short recovery period which are all the desirable features of perfect anesthesia.

Incision

A right rectus muscle-splitting incision was used in 65.9 per cent of our cases. Other incisions employed were the left rectus, midline, subcostal, and transverse. Wound infection and evisceration are frequent complications following operations for perforated ulcer, ranging from 25.6 to 37 per cent of the cases reported by DeBakey and Odom,[7] Meade,[24] and Kelly.[19] Wound infection, minor degrees of separation, and evisceration occurred in 18.7 per cent of our patients. There were five cases of extensive wound disruption and evisceration.

Adequate exposure for closure of a perforation can be accomplished through a small vertical or transverse incision. Amendola[1] used a small, oblique subcostal approach for suture of his perforations. Hartzell and Sorock[16] recommended a short, transverse incision and lateral retraction of the rectus muscle for simple closure of acute perforation. During the past four years our wound complications have been reduced to a minimum and no eviscerations have occurred following a small transverse incision used in twenty-six cases in which the diagnosis was certain. The incision was made 2 or 3 inches above and to the right of the umbilicus, transversely, through all layers of the abdominal wall. When more exposure was required, the incision was extended to the right or left. Therefore, our incision was usually one-half the length of the transverse upper abdominal incision described by Lynn and Hull.[22] A sulfonamide was frequently applied to the wound prior to opening the peritoneum, and the edges of the wound were carefully protected with abdominal packs. The wounds were closed with fine, interrupted, non-absorbable sutures. By using this type of incision and wound closure, complications were reduced, and the patients were ambulatory within a few days.

Site of Perforation

The site of perforation is a significant factor in the prognosis. Some observers found a higher mortality rate in duodenal ulcers. However, the majority of authors report a higher death rate in gastric perforations, explained on the theory that they are likely to occur in older individuals, and produce greater spillage and contamination of the peritoneal cavity. In 4,825 cases collected by DeBakey,[6] the mortality incidence was 33.3 per cent in gastric perforations, 21.1 per cent in duodenal perforations, and 22.2 per cent in pyloric perforations. As shown in Table VI, there was a slightly higher mortality rate in our duodenal perforations. Also contrary to the rule, there were no deaths in our five female patients, and four of their perforations were in the duodenum. There was one perforation at the site of an old gastrojejunal anastomosis which resulted in a fatality.

Unquestionably, in our series, there were several errors made in correctly locating the site of perforation at the time of operation, especially in the prepyloric ulcers. This was established in some patients by biopsies taken from the edges of what appeared to be gastric perforations but which proved to be inflamed duodenal mucosa. Likewise, in some cases in the gastric group, gastrointestinal x-ray studies taken before the patient was discharged from the hospital revealed a duodenal niche or deformity and a normal stomach. The error can be explained in most instances, by the obliteration of the normal landmarks around the pylorus in the presence of large ulcerations with widespread inflammation, induration, and edema.

Graham[13] included only the duodenal perforations in his most recent report, excluding the gastric cases on the basis that malignant degeneration was of common occurrence. Malignant degeneration was not found in our gastric perforations. However, it must be admitted that biopsies were not taken in all of our cases, and immediate postoperative x-ray studies were also incomplete. A more careful immediate examination and follow-up study must be made to determine the incidence of malignancy in this group of patients.

There were no multiple perforations discov-

TABLE VII. MORTALITY ACCORDING TO THE SIZE OF THE PERFORATION (176 CASES)

Size mm.	No. Cases	No. Deaths	Mortality Per cent
1-5	92	16	17.4
6-10	26	6	23.1
Over 10	9	5	55.5
Unspecified	49	11	——

ered at operation. However, in our deaths, multiple ulcerations were found at necropsy in two gastric ulcers, four duodenal ulcers, and one duodenal ulcer with concurrent gastric ulceration. The second ulcer in the duodenum usually was found on the posterior wall opposite the anterior wall ulcer, the so-called "kissing ulcer." The second ulcer was not perforated and, therefore, not a contributory cause of death in any of these cases. The possibility of a second perforation, though rather infrequent, must always be kept in mind.

Size of Perforation

Statistical data correlating the death rate with the size of the perforation are noticeably lacking in the literature. If the amount of spillage into the peritoneal cavity, which is an accepted etiological factor in many deaths, is directly proportional to the length of time the perforation has been present, there should also be a similar relationship between the amount of peritoneal soiling and the size of the opening. Accurate measurement of our perforations was not made. Nevertheless, in the majority of operative reports there was an estimated measurement or a comparative description of size noted. As shown in Table VII there was a definitely higher rate of mortality in the larger perforations. Therefore, this factor is important and bears a significant relationship to the prognosis.

Bacteriology

Davison, Aries, and Pilot[5] have shown that the peritoneal culture is usually sterile during the first six hours following perforation and the convalescence in these patients is good. When the peritoneal fluid contains organisms, the prognosis should be guarded. In our patients only forty-three cultures were taken. Two were unsatisfactory. Prior to twelve hours, thirty-four cultures were taken. In the patients who survived, fifteen showed no growth, thirteen were positive, and the six cultures taken on the patients who died were all positive. After twelve hours there were only eight cultures taken. All were positive. Four patients survived and four died. Of the twenty-seven patients with positive cultures, ten (39.3 per cent) died. A variety of mixed and single growths of pathogenic and nonpathogenic organisms were found. The more common organisms were the diphtheroids, yeast, staphylococcus, and hemolytic and nonhemolytic streptococcus. The streptococcus was found more often in the patients who died.

TABLE VIII. MORTALITY ACCORDING TO THE TYPE OF OPERATIVE PROCEDURE IN OUR SERIES AND IN THE COLLECTED SERIES[6]

Operative Procedure	Our Cases (176)			Collected Cases (11,284) Mortality Per cent
	No. Cases	No. Deaths	Mortality Per cent	
Simple closure	160	33	22.6	25.9
Closure and gastro-enterostomy	10	3	30.0	20.4
Excision and closure or pyloroplasty	6	2	33.3	15.9
Subtotal gastrectomy	0	0	0.0	13.4

Operative Procedure

During the past few years, the surgical procedures of pyloroplasty and gastroenterostomy have become relatively obsolete. Most surgeons with wide experience in this country agree that in this abdominal emergency a quick, simple closure of the perforation is the procedure of choice. Lahey[21] aptly stated that the life of the patient should be saved and no attempt made to cure the ulcer. Though there are numerous authors, including DeBakey[6] (Table VIII), who have reported a lower mortality following radical procedures, including partial gastrectomy, it should be understood that simple closure was admittedly performed in the poor risk patients. The late results of simple closure have been good in 65 to 90 per cent of the cases followed by Johnston,[17] Gutherie and Sharer,[15] and Williams,[38] indicating more extensive procedures are unnecessary. In DeBakey's collected series[6] of 1,525 cases, the follow-up results were good or fair in 65 per cent of the cases.

As shown in Table VIII, the mortality in our series is considerably lower for simple closure than for closure plus gastroenterostomy, or excision plus closure according to the Heincke-Mikulicz pyloroplasty. The latter procedures were done in only sixteen cases during the earlier years of the survey. Simple closure has been a routine procedure for several years in our institution. The ulcer was usually closed with two or three rows of sutures, incorporating an omental tab in the outer row. In some of the large indurated ulcers, this type of closure was accomplished with difficulty. A modification of the procedure of Gatch and Owen,[11] of approximating the anterior wall of the stomach to the duodenum over the perforation with interrupted silk sutures, was performed in a few cases. The method described by Graham,[12] of suturing a free omental graft over the opening, was done in two cases with success. A variety of suture material was used in our closures. In seventy-six cases in which absorbable suture material was used, the mortality incidence was 31.5 per cent. In seventy-seven cases in which non-absorbable sutures were used throughout, or chromic through the ulcer and non-absorbable sutures in the outer layers, the mortality incidence appears to be significantly lower, 7.8 per cent. However, such correlations have questionable statistical value since there are several factors having an important relationship to the death rate. A sulfonamide was frequently, but not routinely, implanted locally in the peritoneal cavity around the site of perforation. The value of this procedure has not been definitely determined. On two occasions, 100,000 units of diluted penicillin were used locally in the peritoneal cavity.

Drainage

Years ago drains were used frequently following operation for perforation. They were commonly placed either below the liver, in the pelvis, in the upper right lateral gutter, or in the subcutaneous space of the wound to prevent complications and abscess formation. Later, a period followed in which drainage was advocated only when there was rather marked peritoneal soiling. Though many surgeons continue to employ drainage, there seems to be an equal number of authors, as shown by DeBakey,[6] who believe drainage is contraindicated. At the present time there is an increasing tendency not to drain. Since fibrinous adhesions begin to form around the drains within the first twenty-four hours, it becomes apparent that drainage of the peritoneal cavity is impossible except for a very limited area directly around the drain.

Since 1935 drains have been rarely used in our cases. The incidence of wound closure without drainage was 46.5 per cent in our series. We believe that drainage is indicated only when a localized abscess is present. Much reliance is placed on thorough cleansing of the peritoneal cavity by adequate removal of free fluid and food particles. In many cases the peritoneal cavity in the region of the ulcer was washed with a liter or more of warm saline and removed by suction.

The problem of drainage is not of sufficient importance to make a statistical correlation significant between mortality and drainage, and such comparisons seem worthless. In our series the mortality rate was 34.6 per cent in the patients with intraperitoneal drainage, and 9.7 per cent in cases closed without drainage. The incidence of wound complications, such as infection, separation, and evisceration, was 12.8 per cent in the patients without drainage and 18.2 per cent in those who were drained.

Postoperative Management

An analysis of cases over an eighteen-year period naturally brings to light many new methods of postoperative care. Ever since 1932 we have employed constant gastric siphonage until peristalsis returns, which is usually on the third or fourth postoperative day. Adequate fluid and chemical balance were maintained; plasma and whole blood were administered when indicated. At present, fluids are routinely started at the beginning of the operation, if not before. Occasionally oxygen was required. Patients were hyperventilated for two or three days and encouraged to cough up tracheo-bronchial secretions. Vitamin B complex and ascorbic acid were administered on the assumption that a vitamin deficiency exists occasionally in the ulcer patient. With the discovery of sulfonamides, the various drugs were frequently, but not routinely, used in either one of three ways: in the peritoneal cavity, in the wound, and/or postoperatively. Since penicillin has been available, we have used it routinely; consequently the use of sulfonamides has diminished. By making a small transverse incision, tightly closed with a fine, interrupted silk technique in all layers of the wound, early ambulation was possible.

TABLE IX. POSTOPERATIVE COMPLICATIONS (176 CASES)

Complication	No.	Per cent
Bronchopneumonia	34	19.5
Wound infection, slight separation	28	15.9
Atelectasis	17	9.6
Paralytic ileus	8	4.5
Wound disruption, evisceration	5	2.9
Pleural effusion	4	2.2
Thrombophlebitis	2	1.1
Delirium tremens	2	1.1
Empyema	1	.5
Subdiaphragmatic abscess	1	.5
Intestinal obstruction	1	.5
Gastric fistula	1	.5
Others*	3	1.7

*Include needle in thigh, otitis media and mastoiditis, and abscess right flank.

TABLE X. CAUSES OF DEATH (38 CASES)

Causes of Death	No.
Necropsy Diagnosis (15 Cases)	
Bronchopneumonia	13
Generalized peritonitis	11
Cardiac disease*	4
Paralytic ileus	3
Subdiaphragmatic abscess	3
Subhepatic abscess	1
Pelvic abscess	1
Clinical Diagnosis (23 Cases)	
Generalized peritonitis	19
Bronchopneumonia	13
Localized peritonitis	3
Paralytic ileus	3
Pleural effusion	3
Profound shock	2
Wound evisceration	2
Cardiac disease	2
Atelectasis	1
Septicemia	1
Delirium tremens	1
Possible pulmonary embolism	1

*Include coronary sclerosis, rheumatic endocarditis (old valve defect), syphilitic aortitis, and mural thrombosis.

These are the postoperative measures which have reduced our complications and mortality during the past six years. When discharged from the hospital, the patients were referred to the outpatient clinic for further observation and management. A follow-up study of this series is contemplated as a problem for a subsequent report.

Postoperative Complications

Peritonitis is not classified as a complication because it is present in some degree, either chemical or bacterial, in all cases of perforated ulcer. Bronchopneumonia, with clinical symptoms and signs, together with roentgenological evidence, was the most frequent postoperative complication, occurring in thirty-four cases (19.5 per cent), as shown in Table IX. In twenty-six of those cases death occurred from bronchopneumonia as the chief, or as an important contributory cause of death, as shown in Table X. Wound infection with minor degrees of wound separation was the next most frequent complication. Various degrees of atelectasis, as demonstrated clinically and roentgenologically, was the third most common complication, occurring in seventeen cases (9.6 per cent). However, atelectasis was an associated cause of death in only one case. A few cases of massive collapse were saved by bronchoscopic aspiration. Paralytic ileus was marked in eight cases and an associated cause of death in six. Pleural effusion and empyema were present in a few cases. Among the five patients who eviscerated there were two deaths. The evisceration was not the sole cause of death in those cases but a secondary complication of bronchopneumonia or peritonitis with paralytic ileus and abdominal distention. Only one subdiaphragmatic abscess was recognized postoperatively and treated successfully. Other rare complications were intestinal obstruction, thrombophlebitis, gastric fistula, and delirium tremens. Our incidence of pulmonary complications including bronchopneumonia atelectasis, pleural effusion and empyema was 31.8 per cent. DeBakey's[6] incidence of pulmonary complications was 32.8 per cent in 772 collected complications.

Causes of Death

Necropsy was done in fifteen of the thirty-eight deaths. Causes of death frequently overlapped. For example, some patients died of either generalized peritonitis or bronchopneumonia, while others died with enough peritonitis and bronchopneumonia or some other associated condition, such as an intraperitoneal abscess, making it impossible to determine accurately, from the record, the chief cause of death. As shown in Table X, bronchopneumonia and generalized peritonitis were the most common causes of death. Pleural effusion, empyema, paralytic ileus, localized peritonitis were less commonly found. The two deaths from profound shock include a patient who died on the operating table and another who died a few minutes after the operation. A few patients with overlooked localized abscesses might have been salvaged. DeBakey[6] also reported peritonitis and pulmonary disease as the most frequent causes of death in his collected cases.

Conclusion

In general, our series is similar to other reported series. During the past six years our mortality rate has been reduced to 7.8 per cent in sixty-four consecutive cases. We attribute this reduction to factors within our control, such as early operation, improvements in anesthesia, refinements in surgical technique, and better preoperative and postoperative management acquired through more complete knowledge of the fluid, chemical, protein, and vitamin requirements of the surgical patient. The use of chemotherapeutic drugs, especially penicillin, postoperatively appears to be a very important recent advance in reducing our complications and mortality.

Summary

One hundred seventy-six cases of acute gastric or duodenal perforations with operations during an eighteen-year period are presented. Mortality rates are discussed for the series and by periods. Correlations are made between the mortality and factors known to have a significant relation to the prognosis, such as age, preoperative time interval, anesthetic, site of perforation, size of perforation, operative procedure, and postoperative management. Other factors such as sex, seasonal incidence, time of perforation, pneumoperitoneum, leukocyte count, incision, drainage, complications, and causes of death are discussed.

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Discussion

Dr. Clarence E. Dennis: It is probable that Dr. MacKinnon's review reflects the more recent experience of most hospitals of the type of Minneapolis General. As he points out, the general improvements that have been widely adopted in anesthesia, preparation of the patient, surgical technique, and postoperative management have resulted in a marked drop in mortality rates in the past few years. The advent of penicillin has played no small part in this development.

This general change in type of management nullifies in part some arguments that one would like to draw from Dr. MacKinnon's figures. He found a 35 per cent mortality rate in those patients in whom the abdomen was drained and a 10 per cent mortality when drainage was omitted. The significance of these figures is open to doubt by the fact it is the recent cases only, by and large, which have been closed tightly. The same considerations apply to the use of nonabsorbable suture in the closure of the gastric or duodenal defect, a relatively recent development; in this group the mortality was one-fourth that of the older catgut closed group.

Even though one could challenge the argument that this showed silk intestinal closure to be safer than catgut, we are inclined to favor the use of silk throughout in view of the rather conclusive demonstration by Shambough and Dunphy (*Surgery*, 1937) that contaminated wounds heal more cleanly when closed by silk than by catgut.

A major share in the improvement in results comes from the quality of anesthesia now available to us. The exact type of anesthetic is much less important than the training which Dr. Knight and his group have provided

(Continued on Page 1267)

STREPTOMYCIN: ITS PRESENT USES

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Rochester, Minnesota

THE effectiveness of streptomycin in controlling certain infections which are resistant to other chemotherapeutic agents is now well established. Most authors agree that the use of streptomycin is justified in the treatment of all serious or potentially serious infections caused by organisms which are known to be sensitive to this antibiotic agent. Streptomycin has been found to be definitely superior to other available therapeutic agents in the treatment of certain diseases. These diseases include tularemia, meningitis caused by Hemophilus influenzae, bacteriemia caused by susceptible organisms, uncomplicated infections of the urinary tract caused by certain organisms, pneumonia caused by Klebsiella pneumoniae or Hemophilus influenzae, and some forms of tuberculosis. Streptomycin appears to be of value in the treatment of certain other infections but further clinical research will be necessary before a final estimate of the value of streptomycin in the treatment of these infections can be made.

The effectiveness of streptomycin in most cases of tularemia has been amply demonstrated.[3,9,10] The morbidity and mortality from this disease have been significantly decreased.

Meningitis caused by Hemophilus influenzae usually responds well to treatment with streptomycin.[1,9,10] In cases in which the patients are seriously ill, the use of sulfadiazine and rabbit antiserum also should be considered. Meningitis caused by other organisms which are sensitive to streptomycin may respond to treatment with this antibiotic agent. Penicillin often is necessary to eradicate secondary invaders.

Bacteriemia caused by certain Gram-negative and Gram-positive organisms responds well to treatment with streptomycin if the organisms are sensitive to this antibiotic agent.[9,10] Streptomycin is often effective in the treatment of bacteriemia caused by organisms which are resistant to penicillin. The literature contains reports of a few cases of bacterial endocarditis in which administration of streptomycin produced a cure.[8,12]

Infections of the urinary tract caused by certain susceptible Gram-negative organisms respond well to treatment with streptomycin but the results of the routine treatment of urinary infections with streptomycin have been disappointing.[9,10] The best results appear to have been obtained in cases in which the infection was caused by Proteus ammoniae or Aerobacter aerogenes. Poor results usually are obtained when a foreign body or obstruction is present in the urinary tract. It should be remembered that streptomycin is most effective in an alkaline urine. Sodium bicarbonate or other alkalies should be administered when indicated.

Encouraging results have been obtained in the treatment of some types of pulmonary disease with streptomycin.[2,5] Pneumonia, particularly that caused by Klebsiella pneumoniae or Hemophilus influenzae, may respond to treatment with streptomycin. Empyema caused by sensitive organisms occasionally responds well.

Accumulating evidence indicates that streptomycin has a limited suppressive action on infections caused by Mycobacterium tuberculosis.[6] In many cases of predominantly exudative tuberculosis of the lungs, the immediate results have been satisfactory. Tuberculous lesions of the larynx and tracheobronchial tree usually have healed under treatment with streptomycin. Chronic draining sinus tracts may close within a few weeks after the administration of streptomycin is started. However, mortality rates remain high in cases of tuberculous meningitis and miliary tuberculosis in spite of treatment with streptomycin. In renal tuberculosis, actual healing has been observed only rarely. The place of streptomycin in the treatment of tuberculosis has not been fully determined. It appears, however, that this will be a useful adjunct when combined with standard methods of treatment.

Results obtained with streptomycin in the treatment of other types of infections have been variable. A suppressive effect has been noted[5,10] in some cases of acute brucellosis but there has been a recurrence of symptoms in most of the cases. No effect has been obtained in the treatment of chronic brucellosis. The results obtained to date in the treatment of typhoid fever have been disappointing. Laboratory studies suggest that

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From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

Read at the annual meeting of the Minnesota State Medical Association, Duluth, Minnesota, July 1, 1947.

whooping cough may respond to treatment with streptomycin.[4]

Streptomycin is an effective agent when administered to certain types of surgical patients. Recent studies have indicated that streptomycin, when administered by the oral route, is the most effective agent available for reducing the number of bacterial organisms in the feces.[13] It has been used successfully in the preparation of patients prior to operations on the colon. When administered by intramuscular injection or by nebulization, it is a helpful adjunct in the preparation of patients prior to pulmonary resection.[11] In certain instances streptomycin appears indicated in the treatment of traumatic or operative wounds.[7]

There is evidence to suggest that streptomycin is of value in the treatment of experimental peritonitis[13] but clinical experience is as yet too limited to warrant any definite statements regarding the effectiveness of this agent in the treatment of clinical peritonitis.

The ability of some strains and species of organisms to develop a resistance to streptomycin rapidly *in vitro* has been demonstrated repeatedly.[10] Clinically, a similar development of resistance appears to take place. The ability of bacteria to develop a resistance to streptomycin is, of course, of great clinical importance. It appears essential that the bacteria be eradicated completely in the shortest possible time if satisfactory clinical results are to be obtained. This means the administration of adequate doses of streptomycin from the onset of treatment and the use of all other measures which will aid in eradicating the infecting organism rapidly.

Some toxic reactions have been encountered from the use of streptomycin. Disturbances in equilibrium and hearing may occur if treatment with streptomycin is prolonged. Dermatitis is encountered in some cases. Because of these toxic manifestations, care must be used in the administration of this antibiotic agent, and the indiscriminate use of streptomycin is to be condemned.

Summary

Streptomycin appears to be definitely superior to other available chemotherapeutic agents in the treatment of certain diseases. These diseases include tularemia, meningitis caused by Hemophilus influenzae, bacteriemia caused by susceptible organisms, uncomplicated infections of the urinary tract caused by certain organisms, pneumonia caused by Klebsiella pneumoniae or Hemophilus influenzae, and some forms of tuberculosis. Streptomycin appears to be of value in the treatment of certain other infections but further clinical research will be necessary before a final estimate of the value of this agent in the treatment of these infections can be made. Streptomycin is an effective agent when used in the preparation of patients for operations on the colon and prior to pulmonary resection. Certain toxic manifestations are occasionally encountered when streptomycin is administered to patients.

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Think of the benefit from a campaign to stop the spray of infected mouth and nose droplets! Not only would the spread of the disease be slowed, but the seasonal surge of diseases like the common cold, influenza, measles, whooping cough and pneumonia would diminish. It would be possible to go to a movie without having a germ-laden spray hurled at one from behind and consequently having to suffer from the other fellow's respiratory infection. Under these conditions, dodging the tubercle bacillus, in and out of the hospital, would be possible for all of us.—Ezra Bridge, M.D., NTA *Bulletin,* June, 1947.

CARDIAC FINDINGS DUE TO STERNAL DEPRESSION

Report of Two Cases

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An apical systolic murmur is often the dominating sign on which the diagnosis of organic heart disease is based. Rarely, it may be the only finding indicative of organic involvement. Incorrect evaluation of this murmur is frequently responsible for the erroneous diagnosis of heart disease. This is particularly serious in young individuals, usually resulting in unnecessary limitation of physical activities, and its implications lead many of them to a psychoneurotic state.

Sternal depression is a deformity commonly encountered in the average medical practice. It was found, according to Lang, in 3 to 5 per cent of children in the first year of school.[5] The pathogenesis of this condition is not clear. Some of the possibilities mentioned are: delayed and abnormally slow growth of the sternum; purely mechanical intra-uterine deformity caused by pressure of the chin, heel, or knee; trauma during the second half of pregnancy; fetal rickets; fetal mediastinitis; disturbances of the central nervous system; persistence of a physiologic depression in the anterior chest wall during the second month of fetal life.[3] Bromer[1] observed sternal deformities in rachitic children in the late stage of complete healing, and states that these deformities often remain throughout life.

When a sufficient degree of sternal depression exists, the heart is shifted to the left.[3,4,6] In cases where the heart is fixed in the normal position the sternal depression indents the heart.[6] Other findings noted in different cases are: basilar, apical, and pulmonary systolic murmurs; reduplication of the first and second heart sounds; accentuation of the second pulmonic sound.[2,3,4,7,]

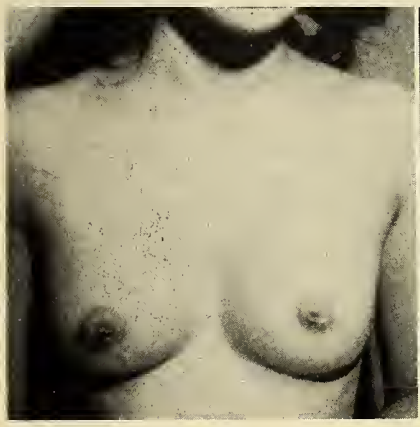

Fig. 1

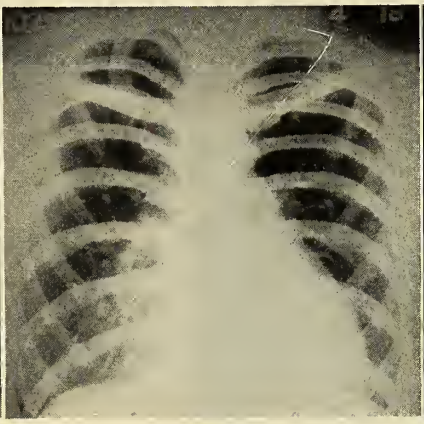

Fig. 2

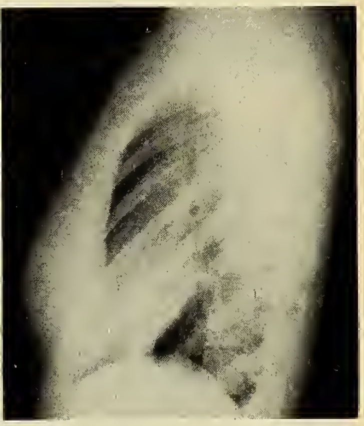

Fig. 3

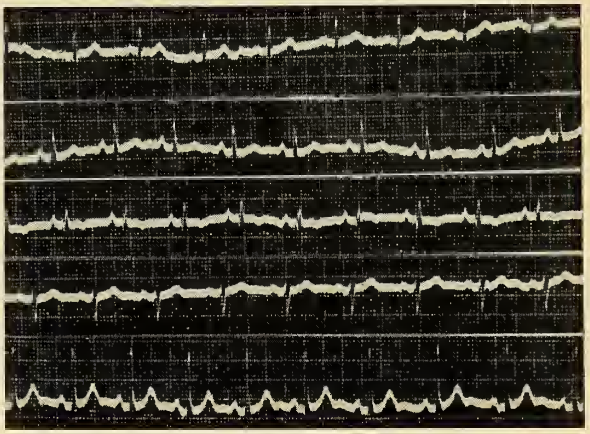

Fig. 4

The electrocardiographic findings are not characteristic. Evans[2] points out that apparent enlargement of the cardiac shadow in the anterior-posterior roentgenogram of the chest is not confirmed in the oblique views, where the heart shadow is normal in size or sometimes seems small. In a comprehensive review of a series of sixteen cases of sternal depression, he notes that the apex beat was displaced outward and a systolic

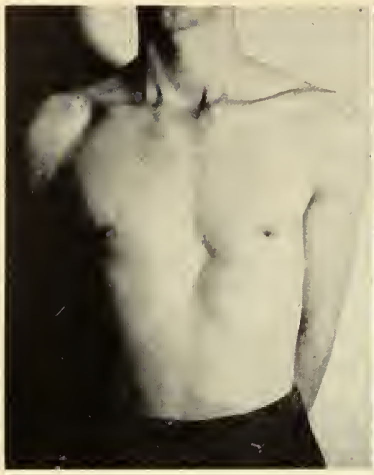

Fig. 5

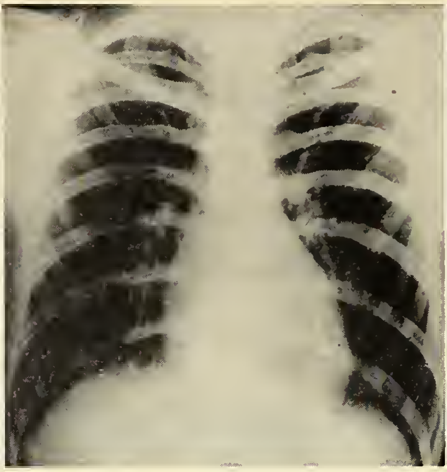

Fig. 6

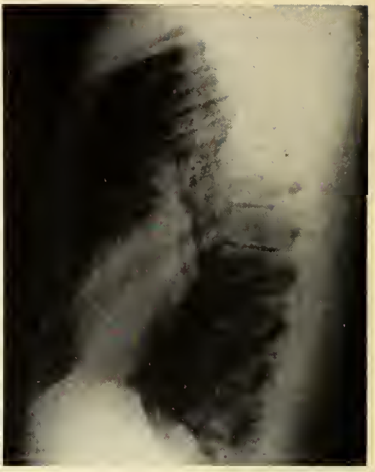

Fig. 7

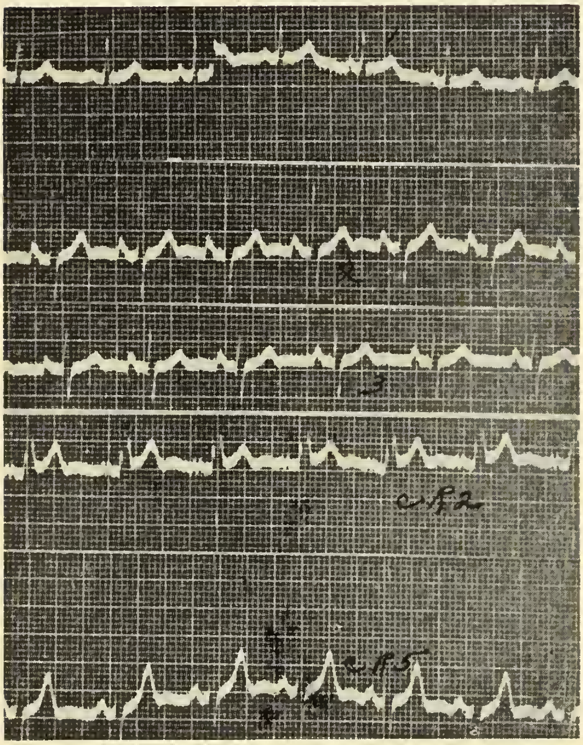

Fig. 8

murmur present in every case. In five of these cases rheumatic heart disease had been wrongly diagnosed. It can easily be seen how this combination of signs would lend itself to the erroneous diagnosis of heart disease.

The following two cases were thought worthy of presentation to emphasize this aspect of the problem.

Case Reports

Case 1.—A white girl, eighteen years of age, consulted me because of a "heart condition" discovered during a physical examination for college entrance. She had been advised to exclude all strenuous activity, and was not allowed to take gymnastic classes. She had no complaints and had always enjoyed good health. On questioning, she felt that she became slightly more dyspneic than her friends on strenuous exertion. There was no rheumatic or rachitic history. Family history was noncontributory.

On physical examination her height was 5 feet 5 inches, weight 125 pounds. She appeared in excellent health. A moderate degree of sternal depression was apparent (Fig. 1). A soft systolic murmur was heard over the pulmonic area and at the apex. There was a slight reduplication of the first sound at the apex. The pulmonic second sound was markedly accentuated. Pulse was 80 per minute and rhythm was regular. Blood pressure was 118 mm. of mercury systolic and 86 diastolic. After exercise the apical systolic murmur was accentuated, loudest during inspiration, returning to its original intensity within 10 seconds, as soon as the heart rate slowed somewhat. The heart size seemed within normal limits. The remainder of the physical examination was negative.

Routine laboratory studies, including urinalysis, complete blood counts and hemoglobin determination, blood sedimentation rate and Kahn flocculation test, were all interpreted as normal. In the anterior-posterior roentgenogram of the chest a slight shift of the entire heart to the left was noted (Fig. 2). The lateral view shows the sternal indentation with a heart shadow of normal size (Fig. 3). Fluoroscopic study revealed the heart to be within normal limits as to size and contour. The electrocardiogram was not abnormal (Fig. 4).

Case 2.—A sixteen-year-old boy in good health consulted me for a physical examination. He had no complaints. His past health had been excellent; however, he had been said to have had rickets during infancy. Family history was non-contributory.

On physical examination his height was 5 feet 11 inches, weight 140 pounds. A mild degree of pyorrhea was present. Moderate depression of the sternum was evident (Fig. 5). At rest a soft rubbing apical systolic murmur was heard during inspiration. The pulmonic second sound was moderately accentuated. Blood pressure was 130 mm. of mercury systolic and 76 diastolic. Pulse was 96 per minute and rhythm was regular. The heart size seemed within normal limits. The remainder of the physical examination was negative.

Routine laboratory studies, including urinalysis, hemoglobin determination, white blood count, blood sedimentation rate, and Kahn flocculation test, were all interpreted as normal. Roentgenographic study, including anterior-posterior (Fig. 6) and lateral films (Fig. 7) of the chest, with fluoroscopic study, revealed the sternal depression, with no alteration in the position of the heart. The heart size and contour were within normal limits. The electrocardiogram revealed no abnormal findings (Fig. 8).

Comment

Sternal depression is encountered frequently enough so that a clear understanding of possible abnormal cardiac findings due to this deformity is important. The erroneous diagnosis of organic heart disease in a young individual may needlessly deprive that person of a normal life, and build up psychoneurotic patterns which may endure. In sternal depression, apparent enlargement of the heart plus abnormally accentuated heart sounds and murmurs furnish the necessary criteria for a diagnosis of heart disease based upon a cursory examination. Thorough study, with roentgenograms of the anterior-posterior and lateral views of the chest, with fluoroscopic study, will eliminate erroneous diagnoses of heart disease in this type of case.

Summary

Two cases in which depression of the sternum produced abnormal cardiac findings are reported. There was no evidence of organic heart disease in either case. Attention is called to the abnormal cardiac findings possible on the basis of this deformity, and the importance of careful evaluation in order to avoid the erroneous diagnosis of organic heart disease, particularly in the young individual.

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ACUTE PERFORATED GASTRIC AND DUODENAL ULCER

(Continued from Page 1262)

for our personnel. It is a pleasure to compliment Dr. MacKinnon on the excellent review which his study has provided.

Dr. Stanley R. Maxeiner: Ninety consecutive cases of perforated peptic ulcer were treated surgically at the Minneapolis Veterans Hospital with a mortality of 5.5 per cent, and sixty-two cases treated consecutively with but one death. Some of these patients were seen from twenty-four to thirty hours after perforation and still recovered. I might also add that we had no regular anesthetist and that anesthesia consisted of spinal and local done by the surgeon. I personally served in the capacity of consultant, and the greater part of the surgery was done by Doctors Sedgley, Culligan, Westphal and Mandell.

Dr. E. A. Regnier: I enjoyed hearing Doctor MacKinnon's paper immensely and I want to congratulate him on his presentation. The tables he presented afford a great deal of information. I was impressed by his conclusions that the type of incision and the type of closure of these wounds are important factors in morbidity and mortality. I definitely subscribe to the transverse incision or some modification of such incision for the repair of perforated ulcers.

Dr. MacKinnon (in closing): One should not include untreated cases having an incorrect diagnosis of perforation with the cases in which the diagnosis has been made and conservative management instituted. Our records reveal several deaths due to gastric and duodenal perforations in patients who were not operated upon or treated conservatively. In these cases the correct diagnosis was unknown until necropsy had been performed. Several of these perforations, with incorrect diagnoses, occurred in moribund and elderly people over seventy years of age. Due to their moribund condition, or the difficulty in obtaining an adequate history, or the presence of minimal abdominal findings, an incorrect diagnosis of coronary disease was frequently made. Apparently, acute perforations are difficult to detect in old people, but the possibility of this condition being present should be kept in mind.

From our analysis, the most important and constant factors having a relationship to the mortality are age and the interval between perforation and operation. Perforations present for longer than twelve hours, or perforations in people over fifty years of age, have a mortality rate higher than the general average. This rate increases in direct proportion to age and the lapse of time up to twenty-four hours. Since the physician has no control over age and only a partial control of the preoperative time interval, extremely low mortality figures for the larger series of cases seem unlikely in the future. Nevertheless, one must strive for a lowered mortality rate through the proper employment of the influential factors under his control.

History of Medicine In Minnesota

NOTES ON THE HISTORY OF MEDICINE IN FILLMORE COUNTY PRIOR TO 1900

By NORA H. GUTHREY
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(Continued from November issue)

H. Thomas, a general practitioner of the eclectic school, was in Chatfield from about 1865 through 1881, according to a business gazetteer, and although entries in such directories are not always indices to terms of residence, since their insertion presumably depended on the inclination of the subjects, the fact that Dr. Thomas' registration was continuous from 1865 through 1881 may reasonably be taken to mean that he left Chatfield in the year 1880 or 1881.

The venerable Timothy Halloran, in his history of Chatfield, in discussing physicians mentioned that "Dr. Thomas also practiced here for many years and moved to Saint Paul, where he died." In 1942 an eminent citizen of Chatfield recalled Dr. Thomas as a man of middle age who was in Chatfield ten or fifteen years, "about in line in professional ability with the rest of them." Another resident of Chatfield, one of the few to remember him, said that Dr. Thomas "was genteel and polished. His wife's maiden name was Berdon. She was the widow Terwilliger, living with her two children in Chatfield, when Dr. Thomas fell in love with her and married her." And still another early citizen, in 1943 in his nineties, described Dr. Thomas as one of dignified presence, meticulous grooming and fine clothes who habitually wore a tall silk hat and carried a cane. On one occasion, however, dignity and sartorial splendor were forgotten. It seems that on a day when the wooden sidewalk in front of Briley's Store was being torn up for replacement, sundry of the unoccupied citizens of the town were at hand, looking in hope of coins among the debris that had accumulated under the boards. A clerk in the store (the old gentleman of this reminiscence), happening to have a five dollar gold piece in his pocket, palmed the coin, ostensibly joined the search, and suddenly with a shout announced this imposing find. To his great delight, among the group of searchers which now rapidly increased, was Dr. Thomas, on his hands and knees, fine clothes, silk hat, cane and all.

In September, 1870, when Dr. O. A. Case, of Preston, was appointed deputy coroner of Fillmore County, he moved to Chatfield, where he entered partnership with Dr. Thomas, "who is well known in this county as a skillful practitioner." And it was in the office of Drs. Thomas and Case that a meeting of the Fillmore County Eclectic Medical Society, of which Dr. Case was president, was called for October 3, 1870, "all brethren of the profession in good standing" being invited to attend.

It is worthy of note, in view of scanty data and some necessarily unverified statements, that a Dr. Harold Thomas, residing in 1883 in Hubbard, Hubbard County, was licensed on examination under the "Diploma Law" of 1883, receiving state exemption certificate No. 598-1 (R), given on December 31, 1883.

It is believed worthy of note also that, as mentioned earlier in this series, there came to Minnesota in 1864 one "Hammond, Thos.," physician and surgeon, native of Adams County, Pennsylvania, who settled in section 31 (in which a part of the village of Chatfield lies), Elmira Township, Olmsted County. This man was listed, post office Chatfield, in an illustrated atlas of Minnesota of 1874 as one of the book's patrons. Considering the complete lack of information otherwise concerning a Dr. Hammond and the fact that Dr. H. Thomas supposedly came to Chatfield in 1864 or 1865, it is suggested that through a clerical error the name appeared "Hammond, Thos." instead of "Thomas, Hammond" (or, possibly, "Harold").

Edward R. Thompson was born in 1853 at Chicago, Illinois, one of a family of five boys. His father, Richard Iver Thompson, was a native of Bergen, Norway; his mother was an American woman, a native of Chicago. In their adult years the five Thompson brothers all were residents of Minnesota: Enos, a lawyer, and William, who had an abstract office, were in Preston; Clarence, a manufacturer, and Cilius, a lawyer, settled in Minneapolis.

Edward Thompson, on completion of his preliminary schooling, was a student at the Upper Iowa University, at Fayette, for two years and thereafter completed his academic work and took a course in pharmacy at the University of Minnesota. It is probable that immediately on completion of his work at the university he entered the Minnesota College Hospital, which was organized in East Minneapolis in the summer of 1881, for he was graduated from that school of medicine in 1882. On November 10, 1883, after the passage of the "Diploma Law" in Minnesota Dr. Thompson received certificate No. 275 (R). He was then practicing medicine in Minneapolis and the inference is that he remained in Minneapolis until moving to Harmony, Fillmore County, in 1893. Dr. Lewis K. Onsgard, a native of Spring Grove, Houston County, had just moved to the village of Houston after five years as a physician in Harmony and the village was temporarily without a resident physician. Here Dr. Thompson remained in general practice for fifteen years, a well-qualified physician who is recalled as progressive in his methods and in his use of superior equipment that was advanced for the time. He was a member of the Methodist Church and of fraternal orders, among them the Independent Order of Odd Fellows and the Modern Woodmen of America. In 1908 Dr. Thompson left Harmony to settle in the village of Peterson, a few miles from Rushford, where he spent the remainder of his life.

Edward R. Thompson was married to Harriet Lockwood, a schoolteacher, of Eau Claire, Wisconsin. One child was born of the marriage, Lulu, who became Mrs. E. R. Pitt, of Eau Claire, and Dr. and Mrs. Thompson adopted one daughter, Mae, Mrs. R. L. Hanson, of St. Paul. When Dr. Thompson died of pneumonia in 1918, in a La Crosse Hospital, he was survived by Mrs. Pitt and Mrs. Hanson and one brother, Clarence Thompson.

French W. Thornhill, son of Samuel Payne Thornhill, M.D., was born in Coshocton County, Ohio, on July 18, 1843.

Dr. Samuel Payne Thornhill, in any record of physicians in Minnesota and in any mention of his physician son, should receive consideration. Born in Rockingham County, Virginia, on March 21, 1821, Samuel P. Thornhill was left an orphan when he was a small child. For a few years he lived with relatives but early was thrown on his own resources for support and education, and the fact that he became an able physician bespeaks the caliber of his native ability. He studied medicine under a preceptor in West Carlisle, Coshocton County, Ohio; began medical practice there and married in the community. His sons, French W. Thornhill and Ampstead S. Thornhill and a third child were born in the county, presumably in West Carlisle, in the forties. While the children were young, Dr. Thornhill moved with his family to Wisconsin, settling first in Horicon; his wife had died, and in Horicon he married again. Of the second marriage there were two children. After a year or two he moved to Janesville, in 1848, where he was in partnership with Dr. Treat, who later practiced successfully in Chicago. In 1855 Dr. Thornhill settled in Hudson, Wisconsin, for seven years. When the Civil War broke out he was made regimental surgeon of the Eighth Wisconsin Volunteer Regiment, the Eagle Regiment under Colonel Murphy, and in 1862 he became brigade surgeon. In the winter of 1869-1870 Dr. Samuel P. Thornhill, accompanied by his son, French W. Thornhill, who had qualified as a physician, arrived in Austin, Mower County, and there he practiced medicine ably for the next ten years, the first three in partnership with Dr. French W. Thornhill, the last seven alone. He died in Austin in March, 1879, from gastric hemorrhage. At the time of his death he had for a period of years been making his home with Mr. and Mrs. (Ellen M. Backus) Fairbanks. (Mrs. Fairbanks studied medicine under Dr. T. Thornhill's instruction and subsequently, in 1881, she was graduated from the Women's Medical College of Chicago and carried on a successful practice in Austin.) Dr. S. P. Thornhill was known in Austin as an untiring, skillful physician, "second to none in his professional attainments" and, "if he had faults, he also had virtues," for he was a true and generous friend and a kind father.

French W. Thornhill at the age of nineteen years entered the Union Army during the Civil War and served as assistant surgeon in the Eighth Volunteer Wisconsin Regiment, in which his father was regimental surgeon. It seems obvious that Dr. Samuel P. Thornhill had been and continued to be his son's preceptor. After the war French Thornhill became a student at the Cincinnati Medical College, from which he was graduated in 1869. Soon after his graduation he was married and when, in 1869, he joined his father in moving to Minnesota, his young wife accompanied him. Minnie A. Smith was born in Daggett Hollow, Tioga County, Pennsylvania, moved with her family to Cambria, Columbia County, Wisconsin, when she was a young girl, and at Cambria was married to French W. Thornhill. There were four children of the marriage, two of whom died in infancy.

For a few years Dr. French W. Thornhill practiced medicine with his father in Austin and for a part of the time managed a farm in sections 5 and 6 of Austin Township that the senior Dr. Thornhill had bought from John I. Wheeler, who was going into Freeborn County. In 1872 with his family Dr. French W. Thornhill settled permanently in Spring Valley, Fillmore County. For many years his professional card appeared in the local newspaper, *Western Progress:* "F. Thornhill, M.D., Physician and Surgeon. Over Bank," and until after the turn of the century he was listed in a reliable gazetteer as a practicing physician of the village. In 1883, when the act to regulate medical practice in Minnesota was passed, he received an exemption certificate on the basis of his years of experience.

Dr. Thornhill followed his profession in Spring Valley and the surrounding community for forty years, combining his professional activities with farming and the raising of fine horses. He died at his home on February 4, 1912, in his sixty-ninth year, survived by his wife, two sons and his brother, Ampstead P. Thornhill, of Racine, Mower County, since deceased. Minnie A. Thornhill lived twenty-one years after her husband's death and died in Spring Valley on February 1, 1933, at the home of her son, Fred Thornhill. In 1943 the two sons, Fred and Frank Thornhill, both retired farmers, were living in Spring Valley.

Augustus Howland Trow was born at Cummington, Massachusetts, on October 22, 1822; he was graduated from the Castleton Medical College (sometimes known as the Academy of Medicine) at Castleton, Vermont, on November 13, 1853; and in the summer of 1856, physician and surgeon, Baptist minister and farmer, he came with his wife and four children into southern Minnesota and settled in Chatfield, Fillmore County. Olive Almira Trow, of equal age (October 17, 1822) with her husband, was a native of Stamford, Vermont. The children were Ellen Acenith, born on July 27, 1843, and Henry Nathaniel, born on July 24, 1849, both at Windsor, Massachusetts; William Howland, native of Victory, New York, born on August 8, 1851; and Milton Augustus, native of Montezuma, New York, on May 10, 1853.

A portion of Chatfield lies in the adjoining county of Olmsted on the north, but in 1856, as now, the greater part of the business section of the village was in Fillmore County. One of Dr. Trow's earliest acts of which there is record after his arrival in Chatfield was to conduct the first religious services to be held in the village, reading his texts from his sheepskin-covered Bible, and shortly afterward he preached in a neighboring community in Elmira Township, Olmsted County. The little congregation of Elmira met in a grove, for in the settlement less than two years old there was not yet a church building and the pioneers as a rule attended services at Chatfield (settled in 1853).

It was not long before Dr. Trow was well established in the practice of medicine, in business, civic affairs and politics, and in farming. In the course of a few years after his arrival he owned and farmed land in section 33, Elmira Township, Olmsted County, and in section 4, Chatfield Township, Fillmore County, and in the early period he hauled his grain, as was customary in the region, with horses or oxen to the mills and markets of Winona, on the Mississippi River. In uncertain autumn and winter weather, over rough and hilly roads, with thirty to forty bushels of grain to a load and each trip taking three or four days, those were long and cruel hauls for both men and beasts. It has been remembered that the route was dotted with the bones of animals that had succumbed to the rigors of the work.

In the autumn of 1856, then with his headquarters on Fillmore Street, Dr. Trow was one of the physicians of Chatfield who published professional cards in the first issue of the *Chatfield Republican*. And in the summer of 1858 he advertised in the *Chatfield Democrat*, as follows:

> DRUG STORE
>
> Dr. Trow would respectfully say to the public that he has on hand a full and well selected assortment of Drugs, Patent Medicine, Xc., which he will sell on the very lowest terms, for *Cash*—including Sloan's Medicine, which he will sell at the unprecedented low prices as follows:
>
> | | |
> |---|---|
> | Sloan's Ointment | 15 cts. per box |
> | Condition Powders | 20 and 4 per box |
>
> All other Medicines and Drugs in Proportion.
>
> July 31, 1858. A. H. Trow, M.D.

And, seasonably, in the late autumn appeared this announcement:

> CUTTERS! CUTTERS! Those who would like a sleigh ride, will do well to call upon the subscriber, who has on hand and offers for sale, a stock of splendid
>
> CUTTERS
>
> at the lowest market prices.
>
> Chatfield, November 20, 1858. A. H. Trow

Although his professional and business cards were not published regularly in the newspapers, his name was listed in various directories of the state from 1865 to and including 1887.

Apparently a man of foresight and sense of professional obligation, in the autumn of 1866 Dr. Trow joined a small group of physicians from various parts of the county in founding the Fillmore County Medical Society and he became the first treasurer of the organization. In one account, in the list of charter members appears the name of M. A. Trow, obviously by mistake, as related earlier, for Milton A. Trow, a son of Augustus H. Trow, although in due time a physician, was in 1866 only thirteen years of age. Dr. A. H. Trow became a member of the Minnesota State Medical Society not long after its re-organization in 1869; his name (A. Trow) appears in the transactions of 1873 as a member of the Committee on Obstetrics. And in 1879 and 1880, with nine other physicians, of Fillmore County, among whom was Dr. Refine W. Twitchell, of Chatfield, Dr. Trow and his son, Dr. Milton A. Trow (graduated in medicine in 1876), replied to circulars sent out from the State Board of Health by Dr. Franklin Staples, of Winona, asking for reports on the local incidence and control of diphtheria. Excerpts from the statements sent in from Chatfield and published in the official report without the reporters' names, were used in the narrative that preceded the present series of biographical notes. During these years Dr. Trow served locally in the interest of public health and sanitation; on April 14, 1880, he was appointed one of the three members of the local board of health, the first such board to be recorded in the community. After the "Diploma Law" of 1883 came into effect in Minnesota, Dr. Trow received state license No. 883 (R), given on April 19, 1884.

There are anecdotes of Dr. Trow's medical practice. A venerable citizen of Chatfield who in 1943 was ninety-two years of age, recalled that when he was fifteen he had lung fever and diphtheria and that Dr. Trow ("Old Doc Trow") was summoned. A few weeks previously the boy had had a severe cough that kept him, and his family, awake at night, and for relief from which his father had prescribed chewing black plug tobacco and swallowing the juice—"Don't be afraid if it makes you a little sick"—with unfortunate results. Dr. Trow came and bled the patient, who was giving evidence of extreme congestion, puncturing each arm three or four times, to produce bleeding from about noon to night, and, be it said, watching the boy the entire time. (Here was included a detailed description of the black blood and the patient's theory as to the circulation of the blood and the purpose of the bleeding.) After the bleeding stopped, the doctor instructed the family to put wilted cabbage leaves on the patient's chest and keep them warm, and by morning, the reminiscence ran, the poison was all out of the lungs, and the patient got better—but it took him a long time to get well after that.

And another resident of Chatfield, of the generation of the old doctor's sons, recalled his own father's description of Dr. Trow's technique of cutaneous vaccination against smallpox. The "old Doctor" carried around with him a tin can full of scabs from smallpox pustules. In vaccinating a patient, he first would scarify the skin, then search through the collection in the tin can for a suitable specimen and, when the choice had been made, would rub the scab vigorously onto the prepared field. "If the patient did not die," said the narrator, "he was immune." This method, however, as is well known, was not peculiar to Dr. Trow.

Dr. Trow was not negligent of civic duty. In 1859-1860 he served a term on the school board of Chatfield and at various times from 1859 to 1874 was a trustee on the village council. In 1873 he and Dr. Refine W. Twitchell, it appears, were of the same opinion about taxation for improvements and decided that it was best to let the village construct sidewalks as required and assess individual property owners for payment; his assessment was $40.78 and Dr. Twitchell's $10.14. In 1859 and in 1860 and again in 1872 Dr. Trow served as representative from the district in the state legislature, at the same time that another physician of Fillmore County, Dr. Thomas H. Everts, of Rushford, was a senator. In a candidacy of 1868, however, he evidently was defeated, on the Democratic ticket; of this campaign the *Chatfield Democrat* had to say on October 17 that "the way he used his opponent in a debate was cruelty to dumb animals."

Among many items in the local newspapers concerning Dr. Trow was an account, "Surprise for Dr. A. H. Trow," in the *Democrat* of February 3, 1883, that seems worthy of inclusion: When some forty to fifty ladies and gentlemen, the story ran, appeared at the Trow home, "Dr. Trow surrendered unconditionally." The ladies of the party had brought with them "an abundance of the good things that make up a rich collation," but before the collation was served, Milvin Bibbins, Esq. presented Dr. and Mrs. Trow "with two comfortable rocking chairs as a token of regard from their friends." Dr. Trow "was almost overcome, but rapidly recovered from his second surprise, and responded in well chosen and feeling words." All the guests, it followed, stayed until the witching hour of twelve under the hospitable roof of Dr. A. H. Trow.

By the early eighties Dr. Trow, a true pioneer, had turned his thoughts to the new Dakota Territory and had invested there in farm lands. Various references to his interest in Dakota have been noted in the Chatfield newspapers of the time. In August, 1883, for instance, he had returned from the territory, driving one team 372 miles in six days, and on the last day driving eighty-seven and a half miles and making thirteen stops; "How is that for mustangs?" he asked. A year later he again had just returned to Chatfield from Dakota where he had been all summer superintending his farm. In the spring of 1887 Dr. Trow and his son Dr. William H. Trow moved permanently from Minnesota to Dakota. Both father and son registered on the territorial roster of physicians on July 11, 1887, as from Carthage, Miner County, Dakota Territory.

(To be continued in the January issue.)

President's Letter

HIDE NOT YOUR LIGHT UNDER A BUSHEL

When looked upon in the aggregate, the accomplishments of medicine appear rich and imposing. In the field of public relations, however, medicine has lagged. Without attempting to offer full explanation of this situation, it may be said that, in our supposedly enlightened time, obstacles to medical progress nevertheless are so formidable that physicians have done creditably to progress at all. It is justifiable to believe that, as adverse pressure is diminished, advancement will become accelerated. I would like to devote a few moments here to further examination of some of these thoughts.

There are in the medical profession men so imbued with the ideals of public service that they volunteer for the task of mitigating those prejudices and obstructive notions, inimical to the public health, which are held by some of our citizens and by some of the personnel of our national governmental establishment. With the same high purpose of defending the people against quackery in society and government, the American Medical Association, through its House of Delegates, has recommended that effort be made by the medical profession to develop a comprehensive public relations program. Accordingly, physicians of Minnesota would do well to enlarge their public relations activities.

It has been said that one of the most fruitful sources of improved public relations is the physician's office. The truth of this statement cannot be denied; but were we to rely on that factor alone, the objective of the House of Delegates of the American Medical Association could not be accomplished.

How, then, can we expand our public relations program? Our approach to the problem must be realistic. We must recognize that publicity does not make up the major portion of such a program but that many other factors must be considered. These should include our relationship with other medical societies and other medical organizations, as well as with the individual members of the Medical Association and of the Woman's Auxiliary. We must strengthen our relationship with voluntary health agencies such as the Minnesota Heart Association, the American Cancer Society, the Minnesota Trudeau Society, and others. We must establish mutual understanding and good will with governmental agencies, the state legislature, the state departments of health, welfare, public assistance, and education, and with the governor's office. We must continue to improve our relationships with the Blue Cross, the Minnesota Medical Service; with private insurance companies, and with groups professionally allied with us, such as nurses, pharmacists, dentists and hospital administrators; with organizations such as women's clubs and men's clubs and with that active liaison which unofficially is known as the parent-teachers association; with farm and labor organizations and with newspaper editors, radio officials, civic leaders, the clergy and educators. We must not consider how well we are known by all these people but how favorably we are regarded by them.

We must establish methods whereby we can inform others of our activities and our problems and, at the same time, whereby we can learn as much as possible concerning their interests and difficulties. At its last meeting, the House of Delegates of the Minnesota State Medical Association instructed the Committee on Rural Medical Service to establish local health councils throughout the state. I attended the first meeting which was called in connection with this program. It was held in Austin on November 11 and was planned and carried through by Dr. Paul Leck, chairman of the Committee on Rural Medical Service. Among those who attended this meeting were representatives of the farm bureau, labor, pharmacists, nurses, schools, the American Red Cross, the League of Women Voters, mayors, county agents, and others, and the enthusiasm manifested augurs well for the project. That is what I mean.

The work of the speakers bureau of the State Medical Association was discontinued during the war. At this time, the demand for speakers exceeds greatly the facilities for meeting it. This bureau should be re-established as soon as possible in order to satisfy the needs of a citizenry which is becoming more health conscious. There is a great demand for information on health and it is very important that the association increase the amount of literature for general distribution.

These and many other developments are necessary if we hope to establish an efficient public relations program. If we fail in this responsibility, not only shall we find ourselves unknown among our neighbors, but the lack of understanding between us will be adverse to the interests of both.

The committees of the State Medical Association and of its component societies are the workshops in which plans of action are created. For many years these committees have proved their value. However, they are composed of practicing physicians who, in order to merit the trust imposed in them, must be concerned primarily with the welfare of their patients. They are, as I said earlier, volunteers who magnanimously take of their own time and energy and money in the interests of persons who often do not realize that the sacrifices just mentioned are being made in their behalf. From what has just been said, it is evident that these self-sacrificing physicians can be and should be only part-time workers. Therein, nevertheless, lies the most significant reason for failure in attainment of many of the objectives of the American Medical Association. Consequently, employment of additional full-time personnel looms as one of the most important needs of the State Medical Association as it faces the task of extending its public relations activities.

I would urge the House of Delegates and the Council to authorize the employment of one, later probably of more than one, full-time assistant in the office of the executive secretary. This assistant should be given the responsibility of co-ordinating the activities which have been mentioned herein and he should interpret them for the public. He should implement the public relations activities of the county medical societies and perform many important functions as an understudy of the executive secretary.

Of course, the price of expansion of the public relations program presents a serious problem. Unfortunately, the need has become imperative at a time when the association is obliged to use for current expenses funds which formerly have been used to supplement the reserve fund. Owing to the unsettled economic state of the world, our reserve fund has shrunk. From authoritative sources we learn that the dollar which was earned in 1940 is worth only fifty cents now, or even less. Industries have recognized this and have modified their financial structure in order to continue in business. State medical associations similarly have found it necessary to increase their annual membership dues in order to meet increased costs. Our annual dues are among the lowest of all the states. In many state medical associations, each member pays annual dues which are more than twice as much as each of us pays. Our out-of-state colleagues have chosen to accept this added financial responsibility because they realize the disastrous consequence to the public, and secondarily to themselves, which might attend their failure to do so. The Minnesota State Medical Association, too, will discharge its responsibilities creditably.

I say this with confidence because I know the aims and the character of my colleagues. Although their outward lives are those of men of the world, their duties often resemble those of the minister or the priest. They say little about it, but they recognize that their lives are dedicated, first, to the service of others, as was the life of Him whose birthday we celebrate in this final month of every year. It was He who, in the Sermon on the Mount, spoke the words which often are paraphrased as they are given at the heading of this letter and which, in full, according to Matthew*, read as follows:

> "Neither do men light a candle, and put it under a bushel, but on a candlestick; and it giveth light unto all that are in the house.
>
> "Let your light so shine before men, that they may see your good works and glorify your Father which is in heaven."

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*Matthew V; 15, 16

Louis A. Buie

President, Minnesota State Medical Association

Editorial

Carl B. Drake, M.D., *Editor;* **George Earl, M.D., Henry L. Ulrich, M.D.**, *Associate Editors*

STREPTOMYCIN AND TUBERCULOSIS

PHYSICIANS are being asked about the value of streptomycin in tuberculosis. Sufficient experience has been had in the use of this new antibiotic in the treatment of tuberculosis to enable the physician at least to advise an inquiring patient.

A preliminary report by the Council on Pharmacy and Chemistry* concerning the results from 543 patients treated in twenty-two different Army, Navy and Veterans Hospitals appeared recently and is a fine presentation of the experience with the drug to date. We quote:

"Streptomycin is a useful adjunct in the treatment of tuberculosis. Indeed, this is an understatement in the case of tuberculous meningitis, miliary tuberculosis, tuberculous sinuses and tuberculous ulcerations of the tracheobronchial tree, for an occasional patient with meningitis has survived, a high percentage of pulmonary miliary lesions have cleared, and nearly all the sinuses and ulcers have healed."

Streptomycin, on the other hand, seems to have little value in the treatment of tuberculosis of the genitourinary tract or of bone or joint. It does not cure the old fibrocavernous lesions of pulmonary tuberculosis. It does, however, in conjunction with bed rest, clear a considerable proportion of exudative pulmonary disease.

As disadvantages to its use, aside from its cost ($6.00 per gram) and scarcity, must be mentioned its toxicity (which is a very serious drawback) and the development of resistance on the part of the tubercle bacilli during its use. The most serious toxic effect is on the labyrinth; this may be permanent and may be disabling. The development of resistance of the bacillus to streptomycin *in vitro* probably means resistance *in vivo*, and this probably means that, after a certain period of treatment, its administration is useless.

The conclusion is justified, therefore, that streptomycin should not be used in minimal pulmonary tuberculous infection in which the present methods of treatment are effective nor in the presence of advanced pulmonary lesions. Neither is it proven that it is indicated preparatory to operation. One can also conclude that in spite of the marvelous results obtained in certain cases, streptomycin is not the answer in the search for an antibiotic which will cure tuberculosis in all its protean manifestations.

SHORTAGE OF NURSES

THE shortage of nurses which was present before the war has become even more acute since the armistice. The causes are largely economic. The high wages available for a young woman in industries which require little or no training cause her to hesitate to devote the three years to training necessary to become a trained nurse. Taking advantage of the present level of high wages is likely to be a short-sighted policy.

A trained nurse acquires a profession which, like all professions, is something that cannot be taken away. While a member of a profession with a more or less stable income is at a disadvantage during periods of inflation, he or she has the advantage during hard times. In making this statement, we are not unmindful of the depression years when there was little or no employment for certain professional people, including nurses. Such periods, however, are fortunately comparatively brief, and the possession of professional training is not lost during such periods.

Today, in Minnesota at least, the trained nurse receives $9.00 a day, which for a five and a half day week and not counting holidays averages $185.00 a month. While a young woman in certain industries can obtain comparable compensation without much preliminary training, one should consider whether such available work is comparable with nursing in interest and importance.

In some states, the requirements for a registered nurse have been lowered, and training schools have been increased to meet the shortage. This has not occurred in Minnesota, and we approve of maintaining the present standards required for registration so that the possession of an R.N. degree may continue to mean the possession of high qualifications. Additional nurses can better be provided by opening new schools or new courses for the training of practical nurses with a year's training.

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*The effects of streptomycin in tuberculosis in man. J.A.M.A., 135:634-643, (Nov. 8) 1947.

A nation-wide effort is being made to increase the enrollment in nurses' training schools. The American Nurses' Association, American Hospital Association and the American Medical Association have joined hands in an effort to remedy the shortage. Individual physicians, members of the Woman's Auxiliary and the public at large are urged to present to potential candidates the advantage of entering the nursing profession.

MINNESOTA MEDICAL SERVICE

IN the September, 1947, issue of MINNESOTA MEDICINE there appeared under "Medical Economics" an article by Mr. Don C. Hawkins, Chairman of the Liaison Committee of Insurance Underwriters, describing a prepayment plan of medical and surgical care.

When the question of prepayment medical insurance came up, two plans were studied, one to be managed by the doctors themselves and the other by commercial insurance companies, with the approval of the doctors as has been done in Wisconsin. The latter was the plan described by Mr. Don Hawkins in the September issue. The following is the doctor-backed nonprofit plan of the Minnesota State Medical Association.

A group of eleven doctors were commissioned by the State Medical Society to present a prepayment plan which would work on the same principle as the Blue Cross plan. This we have done. We have had the experience of many others to guide us and we hope we have avoided their mistakes.

The plan of the doctors is a *nonprofit corporation* which came into being January 4, 1946, under a special enabling act passed by the legislature in 1945. The object of it is "to make possible a wider and more timely availability of medical care, thereby advancing public health and the science and art of medicine in Minnesota."

Free choice of doctor is provided and the doctor may refuse to serve if he so desires. Most of the doctors in the state have signed up to co-operate with this plan. It will take care of doctors' bills in full for unmarried individuals with incomes of $1,500.00 or less, or $2,500.00 or less if they have families. Above that payments may be applied toward the doctor's bill. No attempt is made to set fees. The relation between the doctors and the patient is entirely unchanged. This is a means of helping people to pay their doctor bills and that is all. It will pay for surgical services and obstetrical services anywhere, and for medical services in the hospital only.

Payment will be made according to the schedule which is available to any doctor asking for it. This, of course, is subject to revision as experience dictates. The present schedule we realize is far from perfect. It was lifted "as is" from the Massachusetts plan and was the one we considered best suited to our needs as a starter.

The estimated cost to the patient is $1.00 a month for the individual and $2.25 a month for a family. The method of enrollment is as with the Blue Cross, in groups.

Again I wish to state that the patient may choose any doctor of medicine.

We are using the Blue Cross to do the mechanics of the job, selling, bookkeeping, billing, paying doctors, et cetera, but are an entirely separate and distinct organization.

This is the doctors' plan, the success or failure depends upon them and their co-operation. Improvements, changes, et cetera, will take place as experience warrants.

Preparations have been completed. We are now enrolling a few large groups and on December 1, we will begin to expand and accept all eligible applicants.

No one profits from this plan but it will help lower income people to pay for their medical and surgical expenses. It will, in my opinion, give people more for their money than any combination now offered to the general public.

OLAF I. SOHLBERG, M.D.

MORE CARE

IN our May issue, we mentioned CARE (Co-operative for American Remittances to Europe, Inc.) editorially. Since then, much publicity has been given to this philanthropic quasi-governmental organization, associated with some twenty-seven relief agencies.

It is not so well known that this agency has grown by leaps and bounds so that it is now delivering 10,000 packages daily to the needy in Europe and is prepared to increase the number to 50,000 a day. Also, instead of a limited choice in the make-up of packages, fourteen different types of packages are available, their contents ranging from twenty-two pounds of "standard foods" and special baby food packages to cotton, household utensils, blankets and knitting wool.

It is not necessary for one to know some needy family in Europe in order to take a small part in relieving the widespread suffering in Europe. A check for $10.00 sent to CARE, 50 Broad Street, New York 4, New York, will assure the delivery of a package to some needy family in the country designated. Instead of giving a useless Christmas Christmas present to some friend, in transmitting the order for a CARE package, that friend's name can be sent in and a Donor Certificate will be sent him or her, indicating that the CARE package has been given in the name of that individual.

If each reader would try to interest ten other people in this practical way of helping to meet the tragic situation in Europe today, the services of CARE would be greatly increased.

WILLIAM A. O'BRIEN

IN every field of human endeavor it happens that from time to time one individual is outstanding—head and shoulders above all others. This was true of Dr. William A. O'Brien, known as "O. B." to many of his friends.

Instead of one, he had two specialties. The one best known to the public was the education of the laity in medical matters. For twenty years, he had broadcast weekly over the radio under the sponsorship of the Minnesota State Medical Association. He also broadcast for the Minnesota Hospital Association and the Minnesota State Dental Association. For many years his nationally syndicated articles on health had appeared daily in the newspapers. His was a remarkable facility for putting information pertaining to medicine and health in the simple language understandable to the non-medical listener or reader. The field he covered was a wide one and showed a wide range of medical knowledge. This specialty alone would have been a full-time job for an ordinary mortal.

Dr. O'Brien's main vocation was as an educator. As director of the Center for Continuation Study of the University of Minnesota since its organization, the success of this pioneer undertaking in postgraduate instruction absorbed much of his thought and energy. Its outstanding success was due to Dr. O'Brien.

As though this were not enough, Dr. O'Brien was professor of preventive medicine and health education in the medical school. He was also active in cancer and tuberculosis control, being a member of the board of directors of the American Cancer Society and chairman of the Hennepin County Tuberculosis Association's annual Christmas Seal campaign for the past ten years.

Probably no member of our profession had such a wide acquaintance among the physicians of the state and he seems to have had a remarkable faculty for remembering names and faces. Thousands of citizens of Minnesota and bordering states who had heard his genial voice and had read his newspaper articles felt they had lost a personal friend when news of his sudden departure was announced.

While it seems likely that Dr. O'Brien's strenuous existence may have shortened his life, he used his abilities to the utmost for the benefit of medicine and mankind. The proposal of Dean Harold Diehl to start a memorial fund to provide for the inclusion in The Mayo Memorial Center of new and more adequate quarters for the Center of Continuation Study in memory of Dr. O'Brien seems most timely and appropriate.

A MEMORIAL TO DR. O'BRIEN

WHEN death claimed Dr. William A. O'Brien last month many thousands of people felt a sense of great personal loss. In his individual contacts, in his classes, in his public lectures, in his radio talks, and in the many groups with which he worked, Dr. O'Brien radiated friendship, interest and wise counsel. It can be truly said that the world is better for his having lived in it.

Since Dr. O'Brien's death many of these friends have suggested that in appreciation of what he meant to them they would like to contribute toward a memorial in his honor. In response to these suggestions, Dr. Harold S. Diehl, Dean of Medical Sciences at the University, appointed a special committee, under the chairmanship of Mr. Ray M. Amberg, Superintendent of the University Hospitals, to consider an appropriate memorial. This committee proposes that adequate facilities be provided in the new medical center for the continuation study programs in medical and health fields which Dr. O'Brien developed. These programs were Dr. O'Brien's primary interest because they contribute so directly to better health and better medical care; they reach down into every home and community in the state.

This memorial will perpetuate the memory of Dr. O'Brien, and insure continuation of the work in which he pioneered.

Contributions toward this memorial may be sent to the University of Minnesota for the William A. O'Brien Memorial Fund. The names of contributors will be made a matter of record and sent to the family.

WILLIAM A. O'BRIEN

A Tribute

When Dr. O'Brien signed off on his radio program the morning of November 15, no one could have suspected that his life's work of public education had been finished. For years his voice had entered classrooms throughout this State and had also been listened to attentively by thousands who welcomed this opportunity of attending school in their homes and learning from him the message of good health. Through his radio programs, through his newspaper articles, his countless addresses, and his personal contacts, he had become one of the best-known and best-loved citizens of this State. Barely nine hours after this last broadcast Dr. William A. O'Brien lay physically dead but his spirit and influence continue to live as powerful and moving as was the personality which they reflected.

It is probable that most people in Minnesota never saw Dr. O'Brien though many of them knew him by his pictures. It is equally certain that he had never seen most of them. But no one could listen to him week after week without coming to know him, for it was his personality as well as his voice that entered the classroom and the home. They came to know him as a person of great human warmth, who radiate a sense of well-being and good cheer. They recognized him as a genial friend who inspired confidence in all who came within his sphere. They felt that here was an inspired teacher who had a profound affection for all mankind and was anxious to carry his message of health to all his friends.

And it was as one friend to another that he met the public over the air, through his speeches and his personal contacts. While he may not have known most of his public by sight, there were many whom he did know in person, many more whom he knew through friends and relatives, and all of them he knew as a group. In these radio or public addresses, as in his University classroom, he loved to think that he was talking to his friends or to the sons or daughters of those whom he knew well or whom he had met as he travelled around Minnesota. Dr. O'Brien was a man of vast acquaintances. Few have been privileged to know personally so many people throughout the State and few have ever cherished these friendships as deeply as did he. Apart from his family they were his most prized possession. He also knew human nature, and had a singularly broad understanding of young and old alike and a capacity to project himself into their situation and understand their needs and uncertainties. It was from this basis of understanding and love of mankind that Dr. O'Brien talked or wrote his way into the hearts and lives of millions throughout the nation.

Dr. O'Brien talked and wrote simply, naturally and directly, in keeping with his character. He did not resort to oratorical or rhetorical devices, to tricks of delivery or teaching. He had a message to deliver, a message that came from the heart, one that he was most anxious to have heard because it was designed for friends whom he wanted to help. The public recognized the reliability of this message for it was a reflection of the integrity of his character. It was something more than a mere message of medical facts. He was teaching facts, to be sure, but he was most interested in these as part of the normal development for life and the tasks and responsibilities that citizenship imposes on the individual. He was most eager that everyone should learn to assume his share of the burden of protecting the health and well-being of the community.

To the medical profession of the Northwest and of Minnesota in particular, Dr. O'Brien was a symbol of continuing professional development. He had a singular capacity for sympathetic understanding of the professional and educational needs of the practitioner. This was coupled with an impelling urge to help his fellow physicians in their quest for that further knowledge needed to keep them abreast of the rapid current changes in medical practice. He was not satisfied with a career devoted solely to public education for health but took unto himself the added burden of helping his medical friends to appreciate the benefits of postgraduate study and to obtain that instruction required to satisfy their needs. This he did, not out of a detached interest in the scope and techniques of postgraduate medical education, but as a personal friend of the physician imbued with an overwhelming desire to put his talents to work to improve the profession to which he was so proud to belong.

Dr. O'Brien was also a man of great courage. Few realized the last few months that they were listening to one who was not well, who knew that he was staring death in the face. He knew it probably better than did anyone else. Yet in this realization he deviated in no respect from his normal warmth of personality, his devotion to his work, his firm desire to help to a more healthful living. So strong was this devotion to the task which he had set himself that he continued his teaching, his talking to various groups long after the time had come when for his own good he should have rested. Courageously and unchanged, he walked in the shadow of death, a kindred soul who could sing with the poet:

Fear death? to feel the fog in my throat,
The mist in my face,
When the snows begin, and the blasts denote
I am nearing the place,
The power of the night, the press of the storm,
The post of the foe;
Where he stands, the Arch Fear in a visible form,
Yet the strong man must go:
For the journey is done and the summit atained,
And the barriers fall,
Though a battle's to fight ere the guerdon be gained,
The reward of it all.
I was ever a fighter, so—one fight more,
The best and the last!
I would hate that death bandaged my eyes, and forbore
And bade me creep past.
No! let me taste the whole of it, fare like my peers
The heroes of old,
Bear the brunt, in a minute pay glad life's arrears
Of pain, darkness and cold.
For sudden the worst turns the best to the brave,
The black minute's at end,
And the elements' rage, the fiend-voices that rave,
Shall dwindle, shall blend,
Shall change, shall become first a peace out of pain,
Then a light, then thy breast,
O thou soul of my soul! I shall clasp thee again,
And with God be the rest!

Today the voice of Dr. O'Brien is stilled. We shall not be privileged to hear it further. We shall miss it. But though the voice is stilled, his spirit remains and pervades the classrooms and homes where he taught. The memory of his life and the warmth of his personality will linger in the minds and hearts of all who knew him, whether directly or through these indirect radio, newspaper or lecture contacts. Those of us who knew him best and worked side by side with him know that we, like the reading and listening public, have lost a true friend. Like them we have had a great privilege in being associated with him. Few persons have touched the lives of so many of their fellow beings, and of few can it be so truly said that they left the world a better place from the fact that they lived in it. As his friends pick up the torch and prepare to carry on the work which he would wish to have continued without interruption, they pause humbly and reverently to pay tribute to his memory and to say simply as he would have had it, "Well done, Dr. O'Brien."

Gaylord W. Anderson, M.D.
Director, School of Public Health

November 19, 1947

COMPARATIVE COSTS OF MEDICAL CARE

Expenditures for medical care in comparison with such items as alcoholic beverages, recreation, tobacco, personal care and jewelry, using the figures published by the U. S. Department of Commerce published in July, 1947, has been made by Dr. Frank G. Dickinson, Director of the Bureau of Medical Economic Research of the American Medical Association, and he presents some interesting findings. The cost of operating veterans hospitals and governmental tuberculosis sanatoriums are not included in the government's figures. The items for physicians' services include the gross receipts of physicians in private practice exclusive of payments from life insurance companies, fees from businesses and the like. It is admitted that the reduction in the number of physicians and dentists in private practice, due to the war, affects the figures somewhat.

The total expenditures for all the items selected (medical care, alcoholic beverages, recreation, tobacco, personal care and jewelry) increased from 11.8 billions in the basic period (the average for the years 1933-1939) to 29.4 billions in 1946. The cost of medical care alone increased from 2.6 billions to 5.6 billions during the same period. In 1945, the amount paid for physicians' services alone was 1.3 billions compared with 0.8 billion in the basic period. The figure for 1946 is not available.

The totals spent in 1946 compared with the basic period increased from 3.2 to 8.8 billions for alcoholic beverages; from 3.1 to 7.9 billions for recreation; from 1.6 to 3.4 billions for tobacco; from 0.9 to 2.3 billions for personal care and from 0.3 to 1.4 billions for jewelry.

The total amount spent for medical care from this basic period (the average for 1933-39) to 1946 went up 211 per cent; alcoholic beverages 277 per cent; recreation 253 per cent; tobacco 210 per cent; personal care 253 per cent and jewelry 408 per cent. The total spent on physicians' services increased only 163 per cent from the basic period to 1945.

The personal income of the American people not including amounts received by the armed forces increased from 68.7 billions in the basic period to 149.1 billions in 1945. The percentage of these totals paid for physicians' services decreased from 1.2 per cent to 0.9 per cent during this period. The percentage total income paid to hospitals during this same period also decreased from 0.2 per cent to 0.5 per cent. The total cost of medical care similarily showed a reduction from 3.8 per cent to 3.3 per cent of total income.

How is the cost of medical care divided? It is interesting to note that in 1945, the physician received 30.8 per cent; the hospitals 16.8 per cent; drugs and sundries 21.2 per cent; dentists 13.4 per cent and all other medical care 17.8 per cent of the total.

To quote: "Medical care is expensive; it is becoming more expensive; yet, as a percentage of national income in a period of frenzied prosperity, it is a shrinking item. Medical care is expensive, but patients are getting more for their money in terms of longer life."

MEDICAL ECONOMICS

Edited by the Committee on Medical Economics
of the
Minnesota State Medical Association
George Earl, M.D., Chairman

PREPAYMENT MEDICAL CARE TERMED "JIG-SAW PUZZLE"

A jig-saw puzzle, in need of being fitted together—that is the way the present prepayment medical care picture was sketched for delegates to the annual North Central Medical conference, held in Saint Paul, November 23.

Finding the proper place for health co-operatives in the prepayment picture was one of the several economic questions facing doctors in the north central states discussed at the conference which was attended by about 75 officers and committee chairmen of the medical associations of Minnesota, Iowa, Nebraska, North and South Dakota and Wisconsin.

Speaking on the health co-ops was Mr. L. S. Kleinschmidt who has been studying the rural aspects of prepayment medical care programs and particularly the health co-operative movement for the American Medical Association since 1945.

Speaking from his thirty-two years' experience in dealing with the developing of organizations for meeting special rural problems, which began with his employment in 1919 as one of the first county agents in Missouri, Mr. Kleinschmidt gave the doctors some of the background of the co-operative or so-called consumer-sponsored movements.

Health Co-Ops Not New

"The health co-operative movement is not new," Mr. Kleinschmidt said. "It dates back ninety-six years to the 'French Mutual Benevolent Society of San Francisco,' organized in California in December, 1851. The AMA has been particularly interested in health co-ops for the last decade."

Mr. Kleinschmidt stressed the importance of the medical profession's making certain that the highest possible level of medical care standards are maintained in all prepayment medical care proposals, including the co-ops. Back in 1941, he said, the AMA announced that it was not opposed to the use of the principle of insurance purely as a means of meeting the cost of medical care when there is no interference with the quality of service. The AMA has since been working to set up standards to be used by co-operative or consumer-controlled health plans when providing medical services.

About two-thirds of all consumer-sponsored medical care plans have been developed within the last nine years, Mr. Kleinschmidt said. However, he pointed out, medical society plans have an actual enrollment six times as large as the probable enrollment of consumer-sponsored plans.

Doctors Ideal Community Leaders

Doctors as community leaders was the subject discussed by Mr. Thomas A. Hendricks, secretary of the AMA Council on Medical Service. Pointing out the tremendous possibilities physicians have as molders of public opinion, Mr. Hendricks declared:

"Endowed with a formal education and background beyond that available to any other group in the community and experienced in daily intimate contacts with their fellow men as are no other individuals, the members of the medical profession are expected to have a conception of affairs, an analytical power, an outspoken, independent viewpoint that gives warmth, expression, humor, philosophy and 'color' to their communities.

"The physician more than any other person should have a decisive influence on the life, the thinking and the daily habits of the people."

Mr. Hendricks warned that the American medical profession jeopardizes its position of authority and its possibilities for leadership in the preservation of the American ideals of freedom if it allows its members to become what he termed "intellectually colorless." The American medical profession, he declared, must never backslide from the fearlessness and courage of its men "who told their world what they thought and their world listened and molded its action accordingly."

Vets Home-Town Care Expanding

Home-town medical care for veterans is due to expand in the future, according to Dr. W. A. Wright, Williston, N. D., who reported to the doctors on a recent national conference on veterans' medical care held in Chicago.

Dr. Wright, chairman of the North Dakota State Medical Association's economic committee, predicted that the administration of the veterans' medical care program will improve as it continues in operation.

Dr. Paul R. Hawley, medical director of the Veterans Administration in Washington, expressed general satisfaction with the Home-Town Care program at the Chicago Conference, Dr. Wright said; and he indicated that the VA apparently intends to use the services of private physicians even more in the next few years.

The future course of home-town care for veterans will depend on whether the doctors themselves, through their local medical societies, determine to co-operate to the fullest in the present program and whether they can enlist the support of veterans' organizations and lawmakers to keep veterans' medical care on a sound, workable basis.

Improve Agency Relations

Better relations with the public through better co-operation with public agencies providing medical care was recommended for medical societies by Dr. F. L. Rogers of Lincoln, Nebraska, chairman of the planning committee of the medical association in that state.

National, state, county and local agencies, during recent years, Dr. Rogers said, have been requesting an ever-increasing amount of medical service for such groups as the aged, the blind, the handicapped, dependent children, veterans and indigents; and with this there is a growing demand for some sort of uniform plan or policy to apply to all such requests for doctors' services.

Dr. Rogers described the Nebraska physicians' solution—a carefully worked out system of closer co-operation between the medical profession and these agencies wherein doctors endeavor to interpret medical problems to agency administrators and to understand, in turn, the problems of the various agencies.

Speaking on the administration of state medical organizations, Dr. W. D. Stovall, president of the Wisconsin State Medical Society, called attention to the present trend toward organization in which the individual has apparently been forgotten.

Must Act as Individuals

"We have allowed ourselves to be sucked into a whirlpool of organization," Dr. Stovall declared. "We must give more consideration to the individual . . . all our plans are simply words—action takes place around the individual."

Dr. Stovall's remarks were in accord with other conference talks calling for leadership by physicians at the community level. Setting up local health councils, extending medical service and increasing co-operation with public agencies—all are worthy objectives, he said; they are accomplished best through effective local leadership. Local leadership is the key to good medical practice and good government, Dr. Stovall maintained.

Dr. Stovall also suggested certain steps that could be taken by a State Medical organization wishing to revise its methods of operation. He recommended that the society first appoint a committee to thoroughly analyze and evaluate the present setup before attemping to revamp it.

Discuss Local Health Councils

A plan for establishing local health councils was discussed by Dr. Fred Sternagel, a member of the Iowa Interprofessional Association. Dr. Sternagel described the plan in Iowa which is closely allied with the work of a health council and in which the Interprofessional Association cooperates with the state health department to carry health education to the people by conducting local forums on health topics.

Working through public-spirited citizens and organizations in the individual communities—such as the local Parent-Teacher Association—speakers are provided to go out and talk, in language that lay audiences can understand, on topics that the local organization has itself selected.

Professor John O. Christianson, superintendent of the University of Minnesota school of agriculture, who spoke at the conference dinner, encouraged the doctors to continue to increase their efforts in behalf of better rural health by taking advantage of the awakening of farm people to the need for improved living conditions.

For his presidential message, Dr. William Duncan of South Dakota reviewed the situation with regard to the present need for more general practitioners and an accompanying demand for more service from specialists. According to Dr. Duncan, the problem is a combination of maldistribution of the available medical men; not enough emphasis on the ideals of service inherent in the practice of medicine; and a tendency to over-rate the advantages of specialization.

Dr. Gavin Named President-Elect

At the business session of the conference, Dr. S. E. Gavin of Fond du Lac, Wisconsin, was named president-elect, to serve as head of the conference in 1949. Mr. R. R. Rosell, Minnesota's executive secretary, was re-elected to the secretary-treasurership.

Dr. A. W. Adson, in his remarks as incoming president of the North Central Medical Conference, concluded that physicians have a duty to shape public opinion within their own communities and their own states. They likewise, he said, have a responsibility to utilize every possible and workable means to extend medical care to all the people.

Reflecting the entire spirit of the 1947 conference, the Resolutions Committee, of which Dr. Roy W. Fouts of Omaha, Nebraska, was chairman, submitted the following recommendation which was unanimously adopted by the conference:

WHEREAS the principal purpose of these meetings is to stimulate thinking and to develop ideas in connection with the changing concepts with reference to medical needs as they affect both the public and the medical profession, and

WHEREAS prudence would seem to indicate that it is wise to confine our activities to the educational phase of these questions rather than to engage in policy-making by becoming a resoluting organization, therefore, be it

RESOLVED that the delegates and officers of the various state medical organizations represented in this conference and their delegates to the American Medical Association, that are in attendance at this meeting, be requested to carry back to their respective societies the ideas proposed in our discussions to the end that these ideas may be properly presented to the appropriate committees and councils of both state and national organizations.

MOWER COUNTY TO ORGANIZE STATE'S FIRST HEALTH COUNCIL

Steps to organize a local health council, the first in Minnesota, were taken at a meeting November 11 held at Austin. The meeting, to which were invited representatives of organizations and agencies interested in rural health, was called by Dr. Paul C. Leck of Austin, chairman of the Committee on Rural Medical Service of the Minnesota State Medical Association.

About twenty-five organizations (including some of the surrounding towns and villages) were represented. The meeting was conducted purely to acquaint those present with the purposes behind health councils, the possibilities for betterment of health services in the community and to determine whether the professional groups, government officials and the citizens generally would be interested in such a project and would support it.

The keenest possible enthusiasm was displayed by everyone present at the meeting. Assisting Dr. Leck in outlining the possibilities of a health council were Mr. J. S. Jones, secretary of the Minnesota Farm Bureau Federation, Dr. Robert N. Barr of the State Health Department, and Dr. Louis A. Buie, president of the Minnesota State Medical Association.

MINNESOTA STATE BOARD OF MEDICAL EXAMINERS

230 Lowry Medical Arts Building
Saint Paul, Minnesota

Julian F. DuBois, M.D., Secretary

Mountain Lake Pharmacist Sentenced to Prison Term of Eighteen Months for Criminal Abortion

Re: State of Minnesota vs. Jacob S. Balzer

On November 11, 1947, Jacob S. Balzer, fifty-four years of age, a registered pharmacist of Mountain Lake, Minnesota, entered a plea of guilty in the District Court of Cottonwood County to an information charging him with the crime of abortion. Following a statement of the facts to the Court, Balzer was sentenced to a term of not to exceed eighteen months in the State Prison at Stillwater, by the Hon. Charles A. Flinn, Judge of the District Court. In sentencing the defendant, Judge Flinn pointed out that Balzer, as a layman, was jeopardizing the life of each person upon whom he attempted to perform an abortion.

Balzer was arrested on October 18, 1947, following an investigation made by the Minnesota State Board of Medical Examiners, County Attorney Milton F. Juhnke and Sheriff N. J. Bell, both of Cottonwood County. This investigation disclosed that Balzer had performed a criminal abortion on an eighteen-year-old Mountain Lake girl on October 15, 1947. The abortion was performed by injecting an abortifacient paste manufactured by the defendant. The paste consisted of a soft soap base together with iodine, potassium iodide, alcohol and water. Balzer was to receive $100 for his services but the fee was not paid. The patient became critically ill and was hospitalized at Mountain Lake. Following his arrest, Balzer gave a statement in which he admitted having performed approximately fifteen criminal abortions over a period of the past several years.

Balzer was born at Mountain Lake, Minnesota, in 1893, and graduated from the University of Minnesota in 1916, from the School of Pharmacy. He also stated that he took a massage course at the Chicago College of Chiropractic. Balzer holds no license to practice massage in the State of Minnesota. The Minnesota State Board of Medical Examiners wishes to acknowledge the very splendid co-operation that it received in this case from County Attorney Milton F. Juhnke and Sheriff N. J. Bell of Windom, Minnesota.

Minneapolis Surgical Society

Meeting of May 1, 1947

Dr. Thomas J. Kinsella, Presiding

ALIMENTARY DIVERTICULA

Single-Stage Cervical, Thoracic and Abdominal Diverticulectomy

HORACE G. SCOTT, M.D., F.A.C.S.
Minneapolis, Minnesota

My interest in the subject of diverticula of the alimentary tract was aroused during the past fifteen months, as I had the opportunity to see and operate upon four patients with such lesions. Each of these patients had a rather unusual lesion either from the standpoint of size, location, preoperative or postoperative course. These four patients happened to be quite representative of diverticula of the alimentary tract in general, as one was located in the hypopharynx, one in the lower thoracic esophagus, one in the third portion of the duodenum, and one was a Meckel's diverticulum containing gastric mucosa with acute ulceration and hemorrhage. In each instance a single-stage operative procedure was employed for the removal of the diverticulum, in spite of the fact that in the first three cases the lesions were quite large for their respective locations. In each of the first two cases the base of attachment to the esophagus measured 4 centimeters in diameter. The duodenal lesion had a base which measured 3 centimeters in diameter. All four patients recovered and are in excellent health and free from symptoms at the present time.

In addition to these four patients, I had the privilege of seeing ten other patients with diverticula in the upper alimentary tract and eleven additional ones with lesions in the colon, during the past three years. In view of the fact that most of the colon cases were asymptomatic and had only incidental findings in the course of eighty-eight x-ray studies of the colon, I shall exclude these cases from this paper except to mention them and comment briefly on their surgical significance. This paper, therefore, concerns fourteen diverticula of the upper alimentary tract seen in thirteen different patients, four of whom came to operation (Table I).

Of the fourteen diverticula, two occurred in the upper esophagus, one in the lower esophagus, one in the cardia of the stomach, one in the first portion of the duodenum, five in the second portion of the duodenum, and three in the third portion of the duodenum, with the Meckel's diverticulum in the terminal ileum. Four of the thirteen patients were males and nine were females. This fact is of interest because in most reported series the males predominate two to one, whereas in this series the ratio was reversed. Their ages ranged from twenty-two to sixty-nine years. Their average age was fifty-two years. Of the nine duodenal lesions, three were associated with active duodenal ulcers, one with a healed ulcer, one with a large hiatus hernia of the diaphragm and a sixth with metastatic melanoma of the liver. Six, or two-thirds, of the duodenal diverticula were therefore associated with other lesions of the gastrointestinal tract.

I shall briefly review the literature relative to the history of these lesions, their embryology and surgical significance, and shall try to cover the highlights of the past and the pertinent papers of the last five years. In order to present the literature in a logical sequence, I shall divide the gastrointestinal tract, from the pharynx to the rectum, into seven parts. The first part is represented by the pharynx and cervical esophagus; the second, the thoracic esophagus; the third, the stomach; the fourth, the duodenum; the fifth, the small bowel; the sixth, the Meckel's diverticulum, and the seventh, the colon.

Pharyngo-Esophageal Diverticula

The history of diverticula of the cervical esophagus dates back to 1767, when a case of pharyngoesophageal diverticulum was observed by Ludlow. Strickly speaking, these lesions are not true esophageal lesions in that they arise from the lower portion of the pharynx close to the junction with the upper end of the esophagus—wherefore the name pharyngoesophageal diverticula. Harrington has shown that these lesions arise chiefly from three places. First, they arise on the left or right side of the posterior hypopharynx between the inferior constrictor and cricopharyngeal muscles. Secondly, they may arise in the midline between these muscle bundles, or they may arise immediately beneath the cricopharyngeal muscle above the circular fibres of the esophagus. He believes that there may be congenital malformations in the attachment of these muscles and that with advancing years a herniation may develop as the result of constant and increasing pressure on this congenitally weak region. To support his theory, he stated that in his series of 140 cases the average age of these patients was fifty-seven years. Jackson, the Philadelphia endoscopist, has frequently noted a spasm in the cricopharyngeal muscle while passing an esophagoscope and believes that this too may be a factor in causing increased pressure in the hypopharynx. He likes to dilate this muscle to prevent recurrences. McQuillan thinks that in addition to these factors there may be a neuromuscular dysfunction and associated cardiospasm at the lower end of the esophagus and that there may also be a constitutional basis, as diverticula of the esophagus, duodenum and colon are often found in the same individual.

Although this lesion was first described 180 years ago, the first surgical attempt to extirpate one of these pouches was not tried until 60 years ago. At that time,

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Inaugural thesis.

TABLE I. ALIMENTARY DIVERTICULA

Case	Age	Sex	Location of Lesion	Symptoms	Other Pathology
1.	64	M	Esophagus-Upper	Choking, regurgitation	None
2.	57	F	Esophagus-Upper	Dysphagia, neck enlargement	None
3.	56	F	Esophagus-Lower	Dysphagia, regurgitation	Cardiospasm
4.	22	M	Stomach-Cardia	Halitosis, pain	Meckel's diverticulum
5.	28	M	Duodenum—First part	Epigastric pain	Active duodenal ulcer
6.	48	F	Duodenum—Second part	Epigastric pain	Active duodenal ulcer
7.	63	M	Duodenum—Second part	Pain and soreness	Active duodenal ulcer
8.	69	F	Duodenum—Second part	Epigastric pain	Hiatus hernia
9.	65	F	Duodenum—Second part	Epigastric pain	Melanoma
10.	58	F	Duodenum—Second part	Epigastric pain	None
11.	54	F	Duodenum—Third part	Pain and nausea	None
12.	32	F	Duodenum—Third part	Pain and soreness	Healed duodenal ulcer
13.	66	F	Duodenum—Third part	Epigastric pain	None
14.	22	M	Meckel's diverticulum	Bowel hemorrhage	Gastric 'tic'

Nicoladoni produced a servical fistula by diverticulotomy. The first successful operation was performed forty-five years ago by Von Bergmann. Since this time the operation has been performed successfully by many surgeons throughout the world. However, the early reports contained many fatalities from mediastinitis and a high morbidity rate because of cervical fistulas. These complications led to the two-stage operation, which has been employed until fairly recently. The two-stage procedure reduced the mortality greatly, but led not infrequently to constriction of the esophagus, necessitating postoperative dilatations.

In 1941 Stanley Maxeiner presented a single-stage operation, used successfully in three cases, where the danger of leakage was obviated by leaving a clamp on the stump until it sloughed away spontaneously about five days later. More recently the introduction of the sulfa drugs and penicillin has definitely reduced the hazard of the single-stage operation to the near zero mark. Harrington reported 115 single-stage operations in 1945 with no mortality. Only five of his cases required postoperative dilatation and only five developed a temporary fistula. He has abandoned the routine use of the indwelling catheter. After the experience which I had in one of the cases I am about to present, I shall do likewise, because I feel that the failure of this tube to remove gastric contents led in this case to the patient's aspiration of bile vomitus which almost resulted in her death the night of the operation.

Case Reports

The first two cases in my series are of this pharyngoesophageal type. Case 1 is a typical average sized lesion. Up to the present time, this lesion has not been removed, although removal is definitely indicated.

Case 1.—Mr. H. C., aged sixty-four, had been troubled for several years with paroxysms of coughing associated with regurgitation of undigested food which he had eaten the night before. He stated that he had brought up whole grapes and capsules of medicine the morning after taking them. On hearing his story, my clinical impression was that he had an esophageal diverticulum, On November 16, 1944, his pharynx and esophagus were x-rayed, and a typical esophageal diverticulum of moderate size was found. The pouch contained food from the day before. This lesion was rechecked by x-ray again in June, 1946, and the pouch was found to be about 10 per cent larger than when first examined. To date the lesion has not been removed.

Case 2 represents a very large diverticulum in this same area. In fact, the lesion was so large that it completely filled the entire cervical mediastinum. In Harrington's series of 140 cases, he reports fifteen cases of this large variety. The rest of his series were similar to Case 1 of this series. Two hundred and forty cubic centimeters of barium were needed to fill the pouch in the upright position before the barium would trickle over into the esophagus and down into the stomach. X-rays taken with this amount of barium in the pouch reveal an air pocket over the barium equal in size to about 50 per cent of the filled diverticulum. Therefore, the completely filled diverticulum was capable of holding about 360 c.c. or more of fluid material. When it was filled, the patient's neck protruded like a patient with a moderately large colloid goiter.

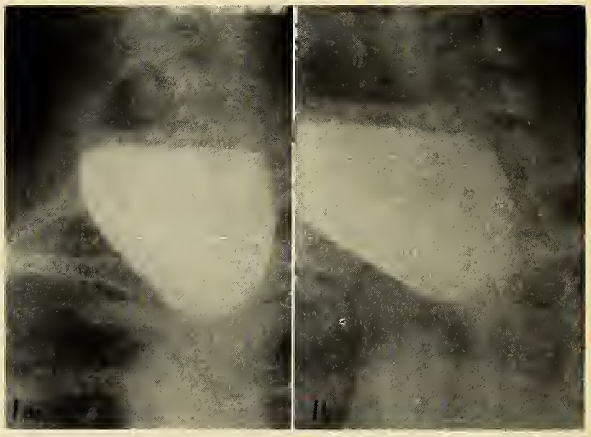


Fig. 1. Case 2. (a) Posterior-anterior x-ray view of the upper esophagus with 200 c.c. of barium in the pouch. Note fluid level and gas bubble overlying barium. (b) Oblique view of same patient preoperatively.

Case 2.—Mrs. M.D., aged fifty-seven, was first seen by me on January 12, 1946. At that time she sought medical aid for what she thought was a goiter. Her chief complaint when seen was difficulty in swallowing. She stated that she could bring up liquids as well as solids two to three hours after eating. She had noted a gradual enlargement in her neck during the past ten years. About four years ago, she began having choking spells when she swallowed solid food. This condition had grown progressively worse during the past year.

X-rays of her esophagus were taken and she was found to have a very large pharyngoesophageal diverticulum coming off the right side of the esophagus at the level of the cricoid cartilage (Fig. 1, a and b).

She was admitted to the hospital on January 21, 1946, for blood typing and intravenous fluids. Two days later the operation was performed. Under sodium pentothal, cyclopropane endotracheal anesthesia, a collar type of incision was made about 4 centimeters above the clavicles. The platysma muscles together with the skin flaps were reflected upward to the level of the superior border of the thyroid cartilage and downward for several centimeters. The carotid sheath with its contained vessels, together with the sternomastoid muscle on the right side were retracted laterally and the space between these structures and the lateral border of the right lobe of the thyroid was deepened down to the sac which projected laterally from the esophagus into this space. The sac was rather easily separated from the surrounding structures. It proved to be a very large sac, measuring approximately 10 centimeters in length and varying from 4 to 5 centimeters in diameter; the base coming off the esophagus also measured 4 centimeters in length. It was invested by an outer fascial structure which probably represented the deep layer of the cervical fascia. This fascial structure was opened into and the sac was isolated near its base.

Dr. Kenneth Phelps then passed an esophagoscope down to the sac and fed a No. 18 long catheter into the distal esophagus. Several attempts were made before the distal esophagus could be identified and the tube inserted into it. A few muscle bundles were found and separated from either side of the sac; the base was then clamped and cut between the forceps. After excising the sac and treating the edges of the mucosa with tincture of merthiolate, a continuous chromic catgut dulox suture was used to close the base. A second row of continuous catgut was placed over this first row and then about fifteen interrupted mattress sutures of silk were used to reinforce these sutures. Following this, two rows of running chromic catgut sutures were placed in the muscle bundles surrounding the esophagus to further reinforce the suture line. After completing the closure of the esophageal defect, about 2 grams of microform sulfathiazole were placed in the wound. A small Penrose drain was placed down to the point from which the sac was removed and the flaps were reapproximated using interrupted chromic catgut sutures in the platysma muscles and skin clips in the skin. The drain was brought out through the incision about 3 centimeters to the right of the midline. The patient left the operating room in good condition with a rubber suction tube extending down the esophagus about half way to the stomach. Later an attempt was made to insert the tube into the stomach, but a spasm of the cardia prevented inserting it into the stomach without exerting undue force on the suture line. The tube was left in the esophagus and connected to a suction bottle.

About 7 o'clock p.m. on the day of operation, the patient had an emesis which was followed at once by marked respiratory difficulty. The patient became cyanotic and comatose. Her pulse became very rapid, respirations labored and her blood pressure rose to 190 systolic. An intern, not knowing she had vomited and thinking that she had an obstruction from a hemorrhage around the trachea, opened the wound. However, as no hemorrhage was found, she was taken immediately to the operating room where an intratracheal tube was introduced and a large amount of bile-stained fluid was aspirated from her bronchi and trachea. Her color soon returned to normal, following which her pulse rate and blood pressure also became normal. The wound was resutured and the intraesophageal tube was then inserted into the stomach. The patient was returned to her room.

The intratracheal tube was also left in the trachea during the night and bile-stained fluid was aspirated frequently from this tube through a catheter connected to an electric suction pump. The following morning the intratracheal tube was removed. As a result of the aspiration of bile into the bronchi, the patient developed one small patch of atelectasis at the base of the right lobe. On the second postoperative day, she developed evidence of a wound infection probably due to the emergency opening of the wound. A few days later, a stab wound was made just above the sternal notch and some seropurulent fluid evacuated. She was given penicillin, 20,000 units, every three hours, but did not respond well to it. She was given one deep x-ray treatment to the neck. When she was discharged from the hospital, on the fifteenth postoperative day, she still had some drainage from the wound. However, she was eating well and within a week the wound had stopped draining. An esophagram on February third revealed a normal outline. It was almost impossible to find the site from which the diverticulum had been removed.

When the diverticulum was examined in the laboratory, microscopically, it measured 7 centimeters in length and 6 centimeters in diameter. It had a fibrous wall 1 to 3 millimeters thick and a white smooth lining. There were several pieces of cooked meat 1 to 2 centimeters in diameter in the sac, in spite of the fact that the patient had been on a liquid diet for four days before the operation. Microscopically, the diverticulum had a wall of smooth muscle and a little fibrous tissue with a moderate number of lymphocytes in it. It was lined by a thick layer of stratified squamous epithelium.

During the past year, the patient has been examined by fluoroscopy and x-ray at regular three-month intervals. A small fleck of barium is seen to cling to the wall of the esophagus at the site from which the former diverticulum was removed. The scar in the neck is almost invisible in spite of the postoperative infection, owing no doubt to the fact that a "collar" type of incision was employed instead of the customary incision parallel to the border of the sternomastoid muscle.

She has gained weight and has felt much better since the operation. She no longer has any difficulty in swallowing either liquids or solids.

Thoracic Esophageal Diverticula

Case 3 in this series is a large pulsion diverticulum of the lower esophagus, which arose from the anterior surface of the esophagus probably initially as a traction diverticulum and later became a pulsion diverticulum because of an associated spasm at the lower end of the esophagus. When first seen two years earlier by another doctor, the diverticulum was mistaken for a simple aclasia of the esophagus. This is not an uncommon occurance especially when only an anterior-posterior view of the esophagus is made. However, a good oblique or lateral view of the barium-filled esophagus should reveal the true nature of this lesion. Most of the diverticula of the lower third of the esophagus are of this type. However, the most common lesion of the thoracic esophagus is the small traction type, located in the middle or upper third of the esophagus behind the bifurcation of the trachea. Here inflammatory peribronchial and mediastinal nodes frequently lead to extension of the process to the adjacent esophagus with resultant scar tissue contracture leading to small out-pouchings of the esophagus. Unless these lesions are associated with an aclasia they rarely attain size sufficient to produce symptoms.

This is not true, however, of the less common pulsion type seen just above the diaphragm. To date, few operative reports concerning removal of these lesions can be found in the literature. Most of the lesions in the past have been treated by dilatation of the cardiac sphincter. Hurst in 1925, Jackson and Jackson in 1933 and Nissen in 1934 have all obtained relief of symptoms in similar cases by dilatation of the cardia. The patient included in this report, likewise, was relieved by dilatation for about twenty months after this was done in 1944. She then had a return of her former symptoms.

Based on experimental work, Gosset in 1903 and Lotheissen in 1908 suggested transdiaphragmatic anastomosis of these lesions with the stomach. According to Hergrovsky in 1912, this was actually done by Lotheissen. In 1931, Lotheissen briefly referred to his case and reported that esophagogastrostomies supposedly for diverticulum had been carried out by Sauerbruch and Henschen. However, the first extirpation of one of these diverticula was apparently carried out successfully by Clairmont in 1924, using the abdominal transdiaphragmatic route. He displaced the sac and adjacent esophagus into the peritoneal cavity and then removed the pouch. Von Hacker and Lotheissen in 1926 noted the successful removal of a sac from the lower esophagus by Willy Meyer. In 1927, Sauerbruch reported three successful cases, one by the transpleural route, the other two through the anterior and posterior mediastinum. One additional case each was reported by Quartero in 1931 and Barrett in 1933, making a total of seven successful cases, five by the transpleural route. Turner attempted to avoid the dangers of opening the esophagus by inverting a small pouch. Recently, this same procedure has been employed by Ferguson and Cameron in handling lesions of the duodenum. In 1937, Lahey sutured the sac in an inverted manner. This same method had been employed by Bortone in lesions of the hypopharynx to avoid the dangers of infection.

In 1945, Lahey reported successful transpleural removal of a pulsion diverticulum and stated that he now had treated a total of six such cases with no mortality. In five of these cases the sac was not removed. He employed the method of fixing the apex of the sac upward along the paravertebral bodies. Recently Janes and Harrington have each reported the removal of four diverticula of the thoracic esophagus by the transpleural route. To date, fourteen transpleural extirpations of the sac have been reported in the literature, in addition to one transabdominal removal, several treated by transdiaphragmatic anastomosis to the stomach, and six apical fixations of the sac in an upward direction. The following case represents another successful transpleural extirpation of a large pouch of the lower esophagus.

Case 3.—Mrs. E. C., aged fifty-six, gave a history of bouts of intermittent vomiting since 1913. For the past twelve to fifteen years, she has had difficulty in swallowing and has had a feeling that foods stuck back of the lower sternum and that she had to wash them down with water or else vomit. Two years ago, a diagnosis of aclasia was made and her cardiac sphincter was dilated. She was relieved for some time, but during the two months preceding the operation, her former symptoms returned and she regurgitated liquids whenever she bent over to pick something up from the floor.

On August 26, 1946, she was admitted to the hospital. X-rays were taken which revealed a rather large diverticulum coming off from the anterior part of the distal fourth of the esophagus about 4 centimeters above the dome of the diaphragm, just back of the heart (Fig. 2, a and b).

An indwelling gastric tube was inserted through the nose five days prior to operation and Varco feedings with added vitamins were started. The patient was operated on, September 3, under endotracheal cyclopropane, sodium pentothal and curare anesthesia. The ninth rib was removed on the left side in the usual manner. The chest was opened through the bed from which the ninth rib was removed. The ribs were then spread, exposing the left lower lobe of the lung. Adhesions were found between the diaphragm and the base of the lower lobe. These were cut carefully and all bleeding points were ligated as they were encountered with 000 chromic catgut sutures. The pulmonary ligament to the left lower lobe was then cut up to the point where the bronchial veins were seen coming from the hilum of the lung. The lung was then pushed upward exposing the heart and the thoracic aorta. The esophagus between these two structures above the dome of the diaphragm was seen to be broader and fuller than normal at this point. The reflection of the pleura over the esophagus was then split vertically and separated gradually by blunt dissection from this portion of the esophagus and the diverticulum. Gradually the entire diverticulum was exposed and pulled upward into the wound until its base, which measured about 4 centimeters in diameter, was visualized clearly. Two Carmault clamps were then placed across the base and the diverticulum was removed by cutting between these clamps.

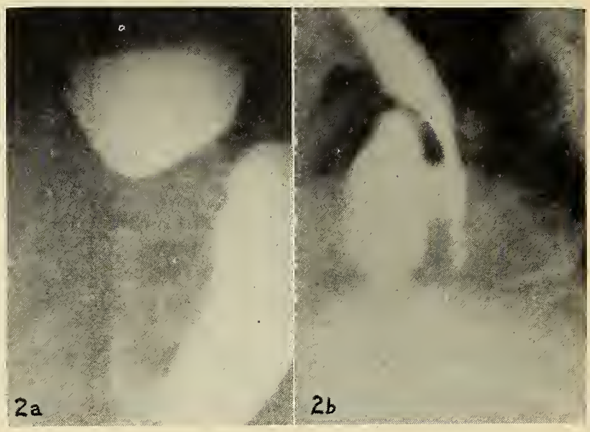


Fig. 2. Case 3. (a) Posterior-anterior x-ray view of large diverticulum of lower esophagus. Note x-ray resemblance to an aclasia of the esophagus. (b) Lateral x-ray view of same patient shows location of diverticulum just above the dome of the diaphragm.

The mucosa was phenolized and then inverted with an over and over running dulox suture. A second row of running suture was applied over the first row and then reinforced with about fifteen mattress sutures of fine silk. Several interrupted sutures were placed in the pleural covering of the esophagus to reapproximate these leaves loosely. Then a drain was placed down to the base of the esophageal incision in the form of a soft rubber catheter and this was brought out through the posterior end of the incision. The chest was closed in the usual manner, using through and through sutures of 00 chromic catgut. In order to facilitate the closure, four heavy silk sutures were placed around the ribs to approximate them. These were removed after the muscle closure had been effected. The skin was closed with a running lock silk suture. The patient left the operating room in good condition. After she had returned to her room, the end of the chest catheter was placed in a bottle of sterile saline. About 200 c.c. of serosanguineous fluid drained into the bottle during the first twenty-four hours. Three days later this tube was removed from the chest.

The pathologist reported the diverticulum to be 5 by 4 centimeters with an opening 2 centimeters in diameter. It had a fibrous wall 3 millimeters thick and was lined by white epithelium similar to that of the esophagus. Microscopically, the diverticulum was lined by stratified squamous epithelium and had a wall composed of bundles of smooth muscle and fibrous tissue. One cluster of mucous glands was noted in the submucosa.

Following the operation, nasal suction was continued for five days. Varco feedings, through the tube, were started on the second postoperative day and continued until the tube was removed five days later. On the ninth postoperative day she was placed on a soft diet. On the tenth day x-rays were taken which revealed a straight esophagus with only slight narrowing at the site of the resection. The chest contained only a small amount of fluid in the left costophrenic angle.

She has been rerayed following the operation at three-month intervals, and to date the esophagus appears essentially normal. The patient feels very well, has gained weight and has none of her former symptoms.

Gastric Diverticula

Case 4 in this series is that of a gastric diverticulum involving the cardia of the stomach. These lesions are found less often than are diverticula in any other part of the gastrointestinal tract. Rivers, Stevens and Kirklin found only twenty-five lesions in 91,532 routine x-ray studies at the Mayo Clinic since 1926. Four specimens were found at that institution in 3,662 postmortem examinations, and ten lesions were discovered in 11,234 exploratory operations on the stomach. Thus the incidence varies from one in 1,000 to about one in 4,000 cases. Forty-three per cent of their lesions were located in the cardia, 43 per cent in the pylorus and 14 per cent in the fundus of the stomach.

Case 4.—Mr. R. D., aged twenty-two, came in to see me on February 25, 1946. He complained of occasional bouts of epigastric pain, failure to gain weight, and halitosis for which he was unable to find relief. A general examination was essentially negative and he was advised to have gastrointestinal studies, which were done March 4. The upper gastrointestinal tract was normal except for a large diverticulum extending outward from the cardiac portion of the stomach on the lesser curvature just below the esophageal hiatus (Fig. 3). He was advised of the nature of his lesion and told that it could be removed if he felt that his symptoms warranted it. He felt that they did, but before he could be operated upon for this lesion he was seen for a massive rectal hemorrhage and was operated upon for a bleeding Meckel's diverticulum. This report will be given later in detail as Case 14.

Duodenal Diverticula

Next to the colon, the duodenum is the most common site of diverticula. Several excellent articles have been written on this subject, by Ferguson, and Cameron, Lahey, Pearse, Edwards, and most recently Arthur Collins of Duluth in the March, 1947, issue of MINNESOTA MEDICINE. Beaver and Boland each have reported acute perforations of duodenal diverticula. In view of the many articles on this subject, I will make no attempt to review the history, treatment and complications of these lesions, but should like to confine my remarks to their etiology.

Numerous theories have been proposed to explain the high frequency of these lesions in the duodenum. None seems adequate to me to explain all of these pouches and therefore, I would like to suggest another explanation to account for the diverticula of the third part of the duodenum, in particular. I believe, like most authors, that the infrequent lesions of the first part of the duodenum are probably secondary to ulcers which have weakened the wall in this area. Secondly, I believe the pouches of the second part of the duodenum form in the weak areas produced by the entrance of the common bile and pancreatic ducts and their accompanying blood vessels. This is the general opinion held by most authors. However, I have not found a good explanation for the large mushroom type of pouches seen in the third part of the duodenum. Those formed in this area, cephalad to the point where the mesenteric vessels cross the duodenum, I believe, arise as the result of increased intraluminal pressure which reaches a maximum just proximal to the point of this crossing. When a partial obstruction of the duodenum exists at the mesenteric crossing, a high intraluminal pressure develops just proximal to this point as the result of peristaltic waves passing down the duodenum. Just why some vessels produce a partial obstruction I am not prepared to say. A number of different factors may be responsible, such as short mesentery, lumbar lordosis or heavy loops of small bowel. The patient to be reported had a very large duodenal loop cephalad to these vessels. It was about 50 per cent larger than normal, indicating a probable partial obstruction where the mesenteric vessels cross the duodenum.

A summary of nine duodenal diverticula encountered in my practice, including a detailed report of the operation in this one case, follows:

Case 5.—Mr. V. J., aged twenty-three, came in on September 19, 1944, with a history of recurrent epigastric pain. X-rays and fluoroscopic examination made after the barium meal showed a fairly large duodenal ulcer and a small diverticulum in the first portion of the duodenum. He was placed on an ulcer regimen and made a good recovery. The x-rays revealed a small stalk connecting the diverticulum with the floor of the ulcer, revealing the etiology of this lesion to be a duodenal ulcer.

Case 6.—Mrs. H. J., aged fifty-three, had a history of epigastric pain and tenderness in the epigastrium. On November 29, 1944, films and fluoroscopic examination was done. These revealed a scar of a healed duodenal ulcer and a small diverticulum in the second portion of the duodenum. This patient was placed on ulcer treatment. She has had intermittent exacerbations of her ulcer symptoms, but it is difficult to evaluate the role that the diverticulum plays, if any, in the causation of her symptoms.

Case 7.—Mr. A. H. D., aged sixty-three, complained chiefly of "heart burn," also some intolerance to fatty foods. On April 27, 1946, he had upper gastrointestinal studies done. These revealed a moderate amount of pylorospasm, an ulcer crater in the duodenal bulb and also a diverticulum of the descending portion of the duodenum. He was placed on ulcer management and made a good recovery.

Case 8.—Mrs. A. H., aged sixty-nine, had a history of recurring pains in the left upper epigastrium immediately after meals. She had noted these symptoms for the past two years but they had become more frequent of late. On December 29, 1945, she had gastrointestinal studies done. These showed approximately the upper three-

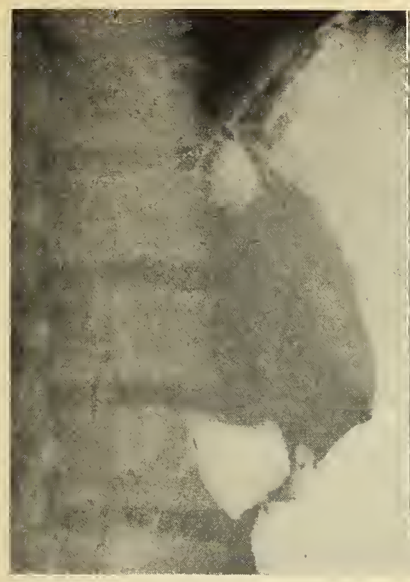


Fig. 3. Case 4. Oblique x-ray view of stomach shows diverticulum high on lesser curvature near entrance of esophagus.

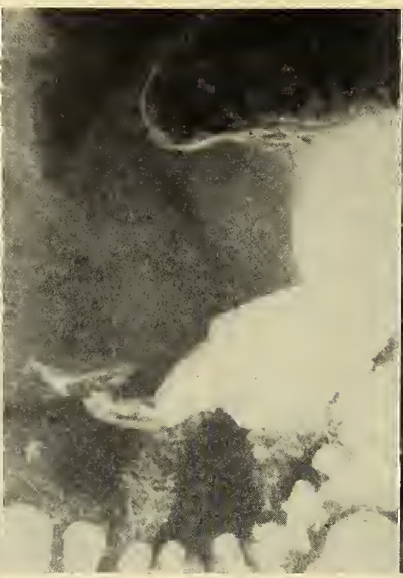


Fig. 4. Case 10. Oblique x-ray view of stomach, cap and duodenum, shows small diverticulum of second portion of the duodenum.

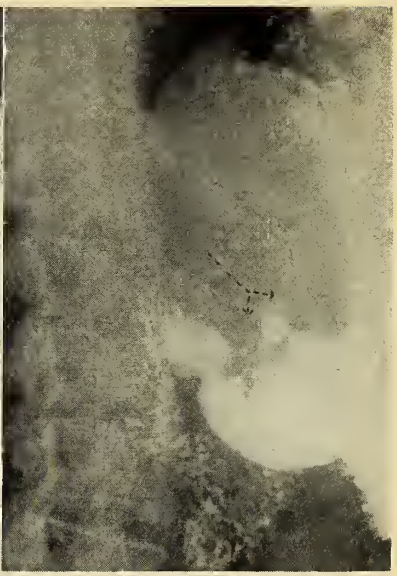


Fig. 5. Case 11. Oblique x-ray view of stomach, cap and duodenum, shows moderate-sized diverticulum of third portion of the duodenum.

quarters of the stomach to be herniated into the thoracic cavity, through the esophageal hiatus. There was an associated diverticulum of the descending portion of the duodenal loop. Surgical repair of the diaphragmatic hernia was suggested, but the patient declined operation because of her age.

Case 9.—Mrs. M. L., aged sixty-five, came in on September 24, 1945, for relief of her symptoms which consisted of pains in the left upper abdomen radiating into the rectum. This patient had had her left eye removed one month previous to this examination. A malignant melanoma had been found. Upper gastrointestinal and colon x-rays were done. These revealed a normal colon, hypertrophic gastritis and a diverticulum of the second portion of the duodenum. This patient has since died from liver matastases from the primary malignant melanoma of the choroid plexus of the eye.

Case 10.—Mrs. I. N., aged fifty-nine, complained of recurrent attacks of pain in the epigastrium which radiated into the back. On October 16, 1946, a complete gastrointestinal study was done and was negative except for a small diverticulum of the second portion of the duodenum (Fig. 4). A gall bladder study was likewise negative. This patient's symptoms are probably due to the diverticulum, but have not been considered severe enough to warrant operation.

Case 11.—Mrs. M. N., aged fifty-four, was first seen by me on January 10, 1944. She gave a history of epigastric pain radiating into her back, nausea and vomiting. On January 14, 1944, gastrointestinal studies were done. These showed no evidence of gastric or duodenal ulcer or cancer. However, they did show a large diverticulum of the third portion of the duodenum with retained food (Fig. 5). A six-hour examination showed barium still in the diverticulum. Since this study, she has had another bout of severe pain, associated with nausea and vomiting. This has been the sixth such episode in the past ten years, with each episode she has been hospitalized and intravenous fluids have been given from one to several days before the vomiting could be controlled. Operation, I feel, is definitely indicated in this case, but so far has not been carried out.

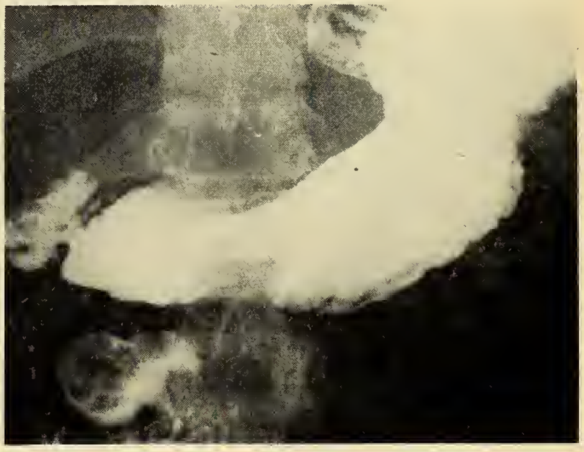


Fig. 6. Case 12. Anterior-posterior x-ray view of stomach, cap and duodenum, shows mushroom type of diverticulum in the third portion of the duodenum.

Case 12.—Mrs. R. E., aged thirty-two, was first seen on January 31, 1947. She gave a history of intermittent bouts of pain in the epigastrium which sometimes radiated into her back, associated with nausea and sometimes vomiting. Certain foods seemed to aggravate this condition. However, she always had a tender spot in the right lower epigastrium. For the month previous to the examination, she ran a fever from 99° to 100° F. every afternoon.

She had been advised on previous occasions to have gastrointestinal and gall-bladder x-rays, but had not done so until February 5, 1947. This examination revealed a deformed duodenal bulb due to an old healed ulcer. She also had a large duodenal diverticulum measuring approximately 5.5 centimeters in its greatest diameter (Fig. 6). The roentgenologist reported that considerable pain and tenderness were elicited when pressure was exerted on the diverticulum but not over the duodenal cap. The diverticulum was located at the junction of the second and third portions of the duodenum on the lesser curvature side. Within the diverticulum there were some rarefactions which probably represented retained food. After four hours, the diverticulum still retained considerable barium. Chest and gall-bladder x-rays were negative for abnormalities.

On March 8, 1947, under sodium pentothal, curare and nitrous oxide anesthesia, a diverticulectomy was performed. A high right rectus incision was made and the rectus muscle was retracted laterally. The stomach and duodenum were examined. The scar from the old duodenal ulcer was found but no evidence of an active ulcer could be made out. The duodenum was quite large and redundant. The duodenal portion of the gastrocolic omentum was opened, exposing the descending portion of the duodenum; the superior mesenteric vessels were located and retracted medially.

The diverticulum was then seen on the mesenteric border just lateral to the point at which the mesenteric vessels crossed the duodenum. Several small blood vessels between the pancreas and the duodenum were clamped, cut and tied off. The diverticulum was gradually pulled out from beneath the head of the pancreas under which it was hidden. The diverticulum had a second small pouch projecting from the medial side near the base. After freeing the muscular fibers which constricted the neck, it was found to have a base measuring about 3 centimeters in diameter. The base was then clamped with two Carmault forceps and cut between the clamps. The mucosa was phenolized and a running dulox suture placed over the clamp to approximate the edges. After removing the clamp, a second row of dulox sutures was taken and this row was reinforced with an interrupted row of silk sutures. The gastrocolic omentum was then closed with a few interrupted sutures. The appendix was located and found to be quite injected; it was amputated and the stump inverted with a purse string suture.

Gastric suction was started following the operation. The tube was left in place for three days and the patient was given the usual postoperative care, including intravenous fluids and penicillin. On the fourth postoperative day, she was able to take soft foods. She made an uneventful convalescence and left the hospital on the ninth postoperative day.

After the diverticulum was removed it measured 3.5 centimeters in length and 2.5 centimeters in width. It was attached by a broad neck and had a thin wall lined with mucosa. Microscopically, the diverticulum was lined by small bowel type of mucosa, the outside of which was a small amount of fibrous tissue and smooth muscle.

The patient was re-examined by x-ray one month following the operation and showed a normal continuity of the duodenum and jejunum where the diverticulum was removed. She has been able to eat all nonirritating foods and has been completely free from pain and soreness in the epigastrium. It is undoubtedly too soon to know whether her symptoms have been relieved completely and permanently. The young woman, who happens to be a graduate nurse, states that she feels like a different person already and seems confident that she is cured of her troubles.

Case 13.—Mrs. M. L., aged sixty-six, first consulted me on March 11, 1947. Her symptoms were chiefly epigastric in character, but extremely vague in nature. Abdominal findings were essentially negative. A gastrointestinal study on April 4, 1947, revealed a normal esophagus, stomach and duodenum with a moderately large diverticulum of the third portion of the duodenum near the duodeno-jejunal junction. It is hard to know how much her symptoms are attributal to the diverticulum. Her case will be studied further before any definite conclusions can be drawn relative to the role that this lesion plays in her symptomatology.

Small Bowel Diverticula

Diverticula of the jejunum and ileum other than a Meckel's are rare. Only a few cases have been reported in the literature. One such case was reported to this society by Dr. James A. Johnson in December, 1944. According to him, Kozium and Jennings, reporting in 1941, found only one hundred and eighty-seven cases recorded in the literature. There are no cases in this series of a small bowel lesion other than the Meckel's diverticulum to be reported next.

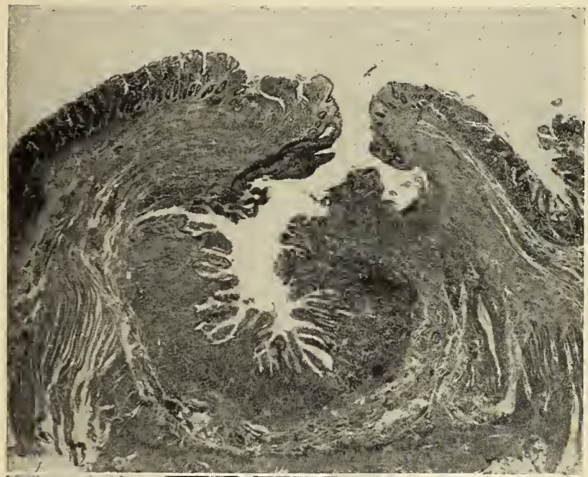
Meckel's Diverticulum

The so-called Meckel's diverticulum is probably the only true congenital diverticulum found in the entire alimentary tract. As is well known, it represents the persistent ileal end of the omphalomesenteric or viteline duct which in early fetal life connects the mid-gut with the yolk sac. Normally the duct closes in the fifth week of fetal life. It is found in about 2 per cent of all people, with a ratio of about two males to one female. It is usually found about one to three feet from the ileocecal valve, although it may be found anywhere from the duodenum to the cecum. About 25 per cent of these lesions contain pancreatic tissue, gastric, jejunal or duodenal mucosa.

The chief complications arise from intestinal obstruction, diverticulitis, perforation or hemorrhage. It may become strangulated or form the head of an intussusception. It has been known to contain foreign bodies and neoplasms. Hemorrhage and intussusception from these lesions are seen most often in infants. Ladd and Gross report twenty-six cases of hemorrhage and seventeen cases of intussusception in seventy-three patients operated upon by them. Strangulation and diverticulitis are more often seen in adults, although hemorrhage is not uncommon in young adults between seventeen and twenty-two years. A bleeding Meckel's lesion should always be considered in painless massive hemorrhage from the rectum in this age group.

Case 14.—Mr. R. D., aged twenty-two, called me to his home on the evening of March 18, 1946. He had been having frequent bloody stools for the past forty-eight hours and profound hemorrhage with the last two bowel movements. The patient was almost completely exsanguinated from blood loss. His blood pressure was 86/46. He was taken to the hospital by ambulance, where he was given 3 pints of blood and 2 liters of 5 per cent glucose in saline during the night. He was also given 8 milligrams of vitamin K and Coaglin (Ciba) intramuscularly. Oxygen was given by the BLB mask. He was given another 3 pints of blood the following day. By the end of that day, his hemoglobin was 53 per cent, his bleeding time was 1 minute and 55 seconds and clotting time 2 minutes. A proctoscopic examination was not satisfactory owing to the large amount of blood in the bowel. The lower rectum was essentially negative.

He continued to have bloody stools for the next two days and more blood was given each day. During the first ninety-six hours in the hospital, he had 9 pints of blood, 94 milligrams of vitamin K, several ampules of Coaglin (Ciba), and several pints of 5 per cent glucose in saline. On March 23, he had an x-ray study of his colon. This revealed a very ragged outline to the colon and terminal ileum which filled with barium for about 18 inches. This was interpreted as representing blood in the colon and terminal ileum, otherwise the x-ray findings were negative. In view of the fact that he had not been nauseated or vomited blood, we felt certain that he was not bleeding from the gastric diverticulum; therefore, by indirect deduction a diagnosis of bleeding Meckel's diverticulum was made.



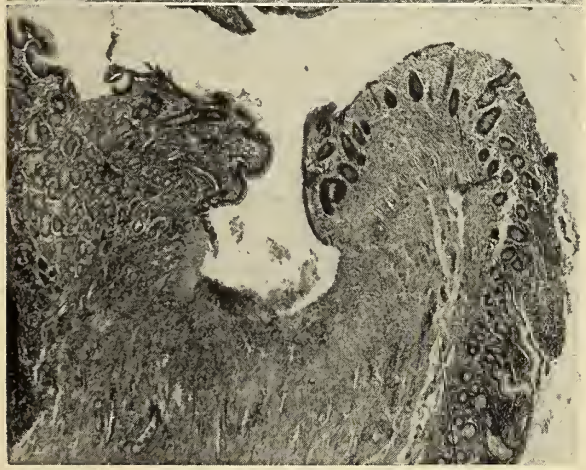


Fig. 7. (*above*) Case 14. Low-power photomicrograph shows ulcer and gastric mucosa in fundus of Meckel's diverticulum.

Fig. 8. (*below*) Case 14. High-power photomicrograph shows bleeding ulcer in ectopic gastric mucosa of Meckel's diverticulum.

About two o'clock p.m., March 23, 1946, under sodium pentothal, cyclopropane and curare anesthesia, a right rectus incision was made. The rectus muscle was retracted laterally and the abdomen opened. The cecum had a very long mesentery allowing it to be pulled well outside the abdomen with ease. No lesion was found in the cecum but there was much old blood within it, as well as in the lower 6 or 8 inches of the terminal ileum. A Meckel's diverticulum was found about 2 feet from the ileocecal valve. It measured 2 by 2 by 4 centimeters. The distal 1 centimeter was firm and solid in consistency. It had a mesentery of its own, containing moderate-sized blood vessels. The diverticulum was amputated transversely to the long axis of the ileum. Wangensteen bowel clamps were used for this purpose. A running dulox suture was placed over the clamp after first using phenol and alcohol on the cut edges. Then the clamp was withdrawn and the suture tightened, inverting the mucous membrane. The suture was reinforced with a second layer of dulox catgut and then the serosa was inverted with a row of mattress silk suture. No blood was found proximal to the Mekel's diverticulum. The appendix was missing, as it had been removed at a previous operation. The stomach was examined because of the presence of the diverticulum high in the cardia which had previously been disclosed one month before. This diverticulum could be palpated and apparently had an extremely thin wall. The abdomen was then closed in layers in the usual manner.

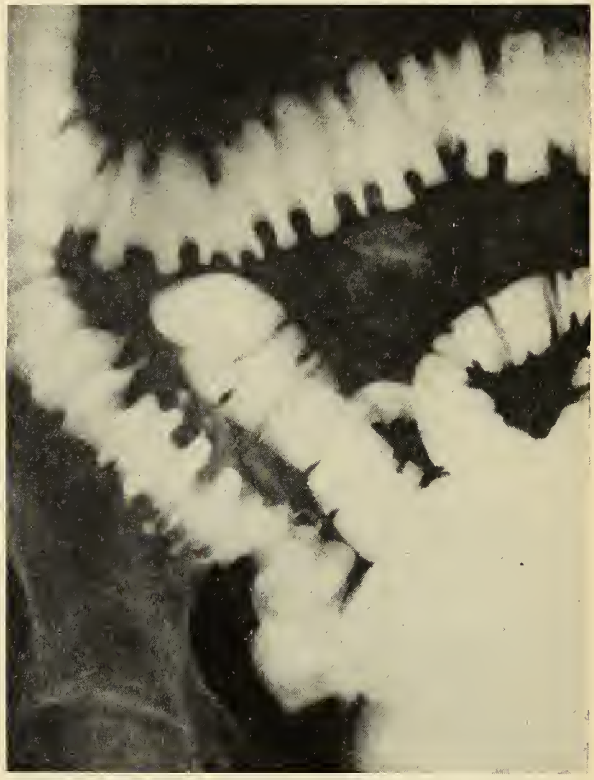


Fig. 9. Diverticulum of colon. Typical x-ray picture of multiple diverticula of colon.

At the conclusion of the operation, the Meckel's lesion was opened and a small ulcer was noted in the fundus. Blood was seen to come from a marginal vessel on the circumference of its base. The outer surface of the diverticulum was pale, smooth and shiny. It was about 25 millimeters long and 16 millimeters wide. The wall was about 2 millimeters thick and there was a marked stenosis about 10 millimeters from the tip, after which the lumen opened out again. The diverticulum was lined with mucosa with transverse rugae. There was a shallow ulcer 3 millimeters in diameter just to the side of the constriction on the proximal side. Microscopically, the upper three-fourths of the diverticulum was lined with intestinal mucosa; the smooth area near the tip and the extra pocket were lined by gastric (fundic) mucosa. The ulcer was partially covered by a single layer of epithelium (Figs. 7 and 8).

Following the operation, gastric suction through an indwelling nasal tube was started for twenty-four hours. He was given two more pints of blood and two liters of 5 per cent glucose in saline. He then made an uneventful convalescence and left the hospital on the eleventh postoperative day. A total of 4,825 cubic centimeters, or roughly 11 pints, of blood were given in order to restore the major part of that which was lost. During the past year, he has remained entirely well except for his one complaint of halitosis, which we feel is due no doubt to fermentation of food in the diverticulum in the cardia of his stomach. A transthoracic approach is planned for the removal of this lesion sometime this coming year.

Diverticula of the Colon

Diverticula of the colon occur quite frequently in the older age groups (Fig. 9). Most roentgenologists report finding these lesions chiefly in the sigmoid colon in about 12 to 16 per cent of all colon studies. The chief significance of these lesions lies in the fact that about 15 per cent become inflamed. A smaller percentage cause general peritonitis and obstruction due to peridiverticulitis. A few will develop internal or external fistulae. Those causing obstruction may be difficult to differentiate from neoplasms. The sigmoid colon being a common site for both conditions, the two may be easily confused. Not until the lesion has been resected may a definite diagnosis be made at times. However, with the use of penicillin and the sulfonamide drugs today, most cases of diverticulitis will resolve on a restricted bland diet combined with the use of large amounts of mineral oil.

Conclusions

1. Single-stage resections of diverticula of the upper and lower esophagus may be safely carried out today, even with lesions having a large base of attachment.

2. Lesions of the duodenum not infrequently cause sufficient symptoms to warrant their removal. Whenever they are large enough to retain food or barium for more than four hours, I think that they should be removed because of the hazard of perforation, obstruction or hemorrhage.

3. Diverticula of the third part of the duodenum are thought to be caused by partial obstruction of the duodenum resulting from pressure caused by the mesenteric vessels crossing this part of the duodenum.

4. A ragged barium x-ray pattern in the colon and terminal ileum is indicative of blood in these parts. Whenever these findings are noted in the absence of other demonstrable pathologic conditions in the colon, a bleeding Meckel's diverticulum should be considered.

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Discussion

Kenneth A. Phelps, M.D.: Thank you very much for asking me to discuss Dr. Scott's excellent paper. The only part of his paper I am at all qualified to discuss is diverticulum of the pharynx, which he refers to as "pharyngo-esophageal." Before long we will eliminate one part of this term and refer to diverticula which are anatomically pharyngeal as "pharyngeal" diverticula and not "pharyngo-esophageal."

I have had the opportunity of seeing about twenty-five of these cases and have used the esophagoscope to help the surgeon during the operation. It has been of great interest to watch different surgeons handle the same problem. The method of closing the stump of the sac has varied from a careful suturing, layer by layer, to no suturing whatever, merely a clamp being applied and allowed to remain for several days until it sloughs off. All have closed satisfactorily.

Operation should be advised even if the patient is seen when the diverticulum is small and the symptoms are insignificant. The sac always enlarges, and the patient's discomfort will increase, making operation a necessity. As a general rule, the smaller the sac, the easier the operation is, on both patient and surgeon.

In the few cases I have seen I have been surprised at the number of complications, such as paralysis of the recurrent laryngeal nerve, pneumothorax, postoperative atelectasis, fistula, postoperative stenosis, recurrence of the sac, but no mediastinitis.

Dr. Scott's handling of his patient who aspirated vomitus on the night of the operation, deserves commendation. He inserted a rubber intratracheal anesthetic tube and through this passed aspirating catheters. He was thus able to keep up more or less continuous bronchial aspiration for several hours, a thing that would have been impossible had a bronchoscope been employed. This technique could be recommended as a good method of draining the bronchi in any case of postoperative atelectasis.

I enjoyed Dr. Scott's paper tremendously and I appreciate your giving me this opportunity to discuss it.

CONSTRICTIVE FIBRINO-PLEURISY

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The development of chemotherapy and antibotics over the past ten years has brought about considerable confusion in the management of empyema. Following the studies of the Empyema Commission[4] in the First World War, the treatment of empyema became standardized. This standardization was based on well-tested and rational concepts, the major consideration of which may be summarized as follows:

1. Vital capacity is protected during the acute phase of the pneumonic process by avoidance of open thoracotomy and reduction of the pleural effusion by needle aspiration.

2. The pleural pocket is completely evacuated and kept so by adequate dependent drainage as soon as the lung has become firmly adherent to the chest wall about the margins of the pocket.

3. The sealed-off uninvolved pleural space is strictly avoided upon draining the empyema pocket, for to expose the uninvolved pleura frequently results in further pulmonary collapse with a sucking chest wound and a massive empyema from dissemination of the infectious contents of the pleural pocket.

4. Re-expansion of the pulmonary tissue, collapsed by the space-filling empyema, is left to the slow process of fibrous tissue contraction and obliteration of the space.

The object of this standardized management of empyema is twofold: first, to reduce the mortality of empyema and, second, to avoid the development of chronic empyema. In the period from 1918 to the introduction of the sulfonamides, empyema, as known to the Empyema Commission, regularly occurred, and by all odds its best management was that outlined by the Commission.

With the introduction of the sulfonamides, and to an even greater extent with the introduction of penicillin, empyema has become less frequent and much less standardized in its manifestations and evolution. The most confusing difference is that the fluid fails to become purulent on schedule, and as a result treatment by aspiration may be greatly prolonged. However, under this management, despite the apparent sterilization of the empyema pocket, absorption of the fluid often fails to occur and in a distressing percentage of cases the fluid loculates and organizes. Removal of the fluid now is no longer possible by aspiration, and open drainage is resorted to. Re-expansion of the lung frequently fails to occur despite the open drainage and secondary infection of the pocket follows. This result is a chronic empyema very incapacitating and difficult to cure.

Chronic empyema was not totally avoided in the period prior to the introduction of the sulfonamides and penicillin, but it probably occurred in a smaller percentage of the cases than now. In any event, either with antibiotics or without, open drainage of a pleural effusion which has been allowed to persist until it has clotted and loculated, or until the pus has become too thick, is followed by failure of the lung to re-expand in a fair percentage of cases.

Since the work of the Empyema Commission, a direct attack on the empyema pocket to bring about re-expansion of the lung, has generally been avoided. If re-expansion did not spontaneously occur with prolonged open drainage, the chest wall was deribbed and allowed to fall into the pleural space, bringing about its obliteration.

These principles in the management of both acute and chronic empyema were crystallized prior to the development of anesthetic agents and techniques which allow respiration to be easily maintained with wide thoracotomy, and before the discovery of effective antibiotics; that is, they were developed to make surgical treatment of empyema safe by avoiding open pneumothorax and dissemination of infectious material at a time when even the temporary occurrence of either was frequently disastrous.

A further factor which has conditioned the management of chronic empyema was the misconception commonly held that in instances when the lung failed to re-expand, following open drainage, the failure of expansion was due to thickening and contraction of the visceral pleura.

Theoretically, a more radical mechanical removal of the fluid and fibrin from the pleural space, allowing immediate complete expansion of the lung, offers the possibility of shortening the recovery time and preserving respiratory function. Consequently many surgeons have attempted this procedure since the appearance of a brief report by Fowler[3] in 1893. He excised the fibrous envelope of a chronic empyema cavity and allowed the lung to re-expand. Delorme[2] at about this same time carried out excision of a localized tuberculous empyema pocket with freeing of the underlying lung and later extended his experiences. Both Fowler and Delorme understood that in any empyema it is not thickened pleura which makes up the wall of the empyema cavity, but rather an organized layer of fibrin which is gradually converted to dense fibrous tissue. This layer only gradually fuses with the pleura. Unfortunately this concept was lost, and soon the erroneous idea that thickened pleura constituted the wall of the empyema cavity came to have wide acceptance.

Lilienthal[5] in 1915 was the first to treat acute empyema by decortication, and he carried out the procedure much as we do today except that he hesitated to separate the lung from the mediastinal pleura, or thoracic wall. He feared the dissemination of infection. Ware[7] also reported a series, in 1917, of acute empyemas treated by decortication. Many others, from the time of Fowler and Delorme to the beginning of World War I, reported on the treatment of empyema by decortication, but due to the constant hazards of anesthesia in open thoracotomy, the inability to prevent the dissemination of infection, and inadequate means of replacing blood loss, the procedure never gained wide acceptance.

Initially, pulmonary decortication was revived in World War II as a procedure to deal with sterile constrictive fibrino-pleurisy accompanying massive hemothorax. The first such decortication was performed by Thomas H. Burford[1] in May of 1943. In the months that followed, this surgeon and gradually many others, working first in the Mediterranean theater and then throughout the armed forces, became more aggressive. By the last of 1943 frank empyemas resulting from infected hemothoraces were being drained by rib-resection, and subsequently, as the patient's sepsis subsided, decortication was carried out. The type of organism recovered from the pleural pocket was not an influencing factor in electing decortication, but rather the degree of pulmonary compression present. With the introduction of penicillin early in 1944 for the treatment of surgical infections, the preliminary rib-resection drainage was largely abandoned and primary decortication of grossly purulent hemothoraces became routine.

I have chosen the title, Constrictive Fibrino-Pleurisy, for this paper as I wish to emphasize that hemothorax is not the only intrapleural pathological process which results in compression of a lung and its imprisonment by a dense shell of organized and fibrosed fibrin. Universally this process occurs sooner or later in the development of every neglected empyema. Blood introduced into the pleural cavity is irritating to the pleura, and promptly there is laid down over the pleural surfaces a layer of fibrin. This undergoes organization by the ingrowth of fibroblasts and capillaries. Exactly the same thing happens in a bacterial pleurisy. The subpleural inflammatory process within the lung irritates the pleura; a pleural effusion forms and fibrin is laid down over the pleura. The effusion gradually becomes more purulent; fibrin clots frequently form within the effusion and organization of the fibrin deposit on the pleura occurs. However the visceral pleura itself is not thickened, if at all, until many weeks later. In 1893 Delorme removed, at autopsy, a leatherlike membrane from the lung of a patient who had had tuberculous pleurisy for six months. The underlying lung was healthy and could be detached, its pleura still thin and elastic. Paulson[6] has recently reported successful decortication of thoracic empyemas which have existed for more than a year. These followed such various primary pleural effusions as postpneumonic pleurisy, subphrenic abscess, and hemothorax.

The following seven cases* are reported to illustrate the similarity between the constrictive fibrino-pleurisy produced by pyogenic infections of the pleura, tuberculous infections of the pleura, and hemothorax. The hemothorax cases are of further interest as they illustrate some of the mechanism producing hemothorax in civilian life, and demonstrate the various stages of constrictive fibrino-pleurisy associated with hemothorax.

Case Reports

Case 1.—A nineteen-year-old boy accidentally shot by a .22 caliber pistol at close range was admitted to St. Mary's Hospital two hours after the injury. The bullet had passed through the soft tissues on the dorsum of the right forearm and entered the thorax through the sternum. It traversed the left upper lobe and left the thorax through an interspace to lodge in the subscapular area.

The patient had no pulmonary symptoms on admission, but both physical signs and roentgen examination demonstrated a closed pneumothorax on the left of moderate degree, and some fluid at the base almost covering the diaphragm which was elevated three interspaces. There was no dyspnea. Color was good and pain was limited to the right forearm.

The fluid in the left chest increased in the next twenty-four hours, completely covering the diaphragm and reaching up to the eighth rib posteriorly. There was a slight shift of the mediastinum and no dyspnea. A total of 750 c.c. of dark blood and 200 c.c. of air were aspirated at this time. Full re-expansion of the lung followed, with only a small amount of fluid remaining in the costophrenic angles. Subsequently the residual fluid absorbed and the roentgenogram studies revealed a normal-appearing chest.

This case illustrates that prompt re-expansion of the lung by complete aspiration of the irritating pleural fluid prevents fibrino-pleurisy and subsequent constrictive pleuritis.

Case 2.—Three weeks prior to admission to St. Mary's Hospital this eleven-year-old boy fell in the snow and was stabbed in the back by an unrecognized object. Examination immediately after the injury revealed a small puncture wound, and only some days later did symptoms suggestive of a pleurisy develop, associated with moderate dyspnea. A roentgenogram on admission to the hospital revealed a massive pleural effusion extending almost to the apex of the right pleural cavity with marked compression of the lung and a small pointed foreign body, 3 cm. in length, occupying the costophrenic angle (Fig. 1).

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*Three of the cases of hemothorax are from the Thoracic Surgical Service of the United States Veterans Hospital, Minneapolis, Minnesota. Dr. Penn Harper performed these decortications under my supervision. The other five cases are from the Minneapolis St. Mary's Hospital service of my senior associate, Dr. T. J. Kinsella, and were cared for jointly.

A diagnosis of hemothorax was made, and thoracotomy with evacuation of the hemothorax and decortication of the lung was carried out promptly. The postoperative course was entirely uneventful and two weeks later the patient was discharged from the hospital with complete re-expansion of the lung and good respiratory motion on both sides (Fig. 2).

This very excellent result was possible because the decortication was carried out early. The peel was only about 5 to 8 mm. in thickness and came away from the pleural surfaces easily and without bleeding. Diaphragmatic mobilization was accomplished completely, as the peel could be removed from its entire surface. It moved well postoperatively and has continued to do so. The histologic condition of the peel removed in this case is illustrated and discussed later in this paper.

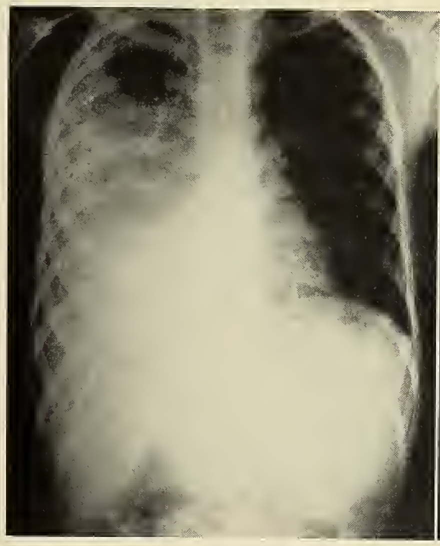

Fig. 1. Case 2. Admission roentgenogram of eleven-year-old boy three weeks after sustaining small puncture wound in posterior sixth intercostal space. Foreign body seen in last interspace proved to be a sliver of window-pane glass.

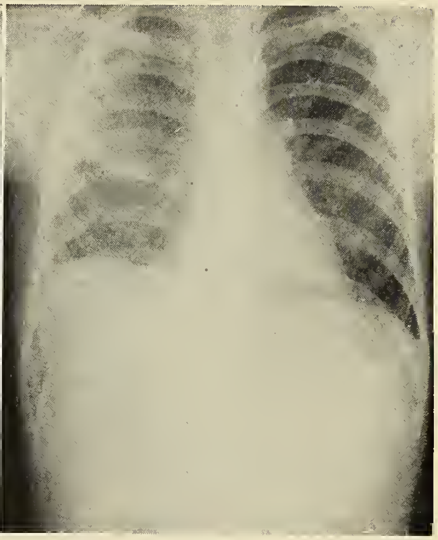

Fig. 2. Case 2. Roentgenogram two weeks after decortication, at time of discharge from hospital. Note fragment of glass has been removed from pleural space.

Case 3.—A twenty-four-year-old man sustained closed fractures of ribs 7, 8, and 9 on the left, and a severe head injury in an auto accident. He was unconscious for many hours and confused for several days. During this time his thoracic injury received little attention other than strapping which relieved his pain. Two weeks later severe pleuritic pain developed on the left accompanied by chills and fever. Despite several aspirations of the chest and vigorous systemic antibiotic therapy, the septic course persisted for the following three weeks. Marked weakness and weight loss resulted, and five weeks after injury, the patient was transferred to the Minneapolis Veterans Hospital.

Aspiration of the chest on admission to the Veterans Hospital demonstrated frank pus containing hemolytic streptococci. Dyspnea was marked at this time. A diagnosis of empyema was made and the patient treated vigorously by interpleural and parenteral penicillin with frequent aspirations of the chest. The infection was controlled but pulmonary re-expansion failed to occur, and after eighteen days a trochar thoracotomy with establishment of closed drainage was resorted to. Frequent pleural irrigations, with penicillin, and continuous negative pressure failed to bring about any pulmonary expansion over the next ten days. A roentgenogram of the chest at this time showed complete collapse of the left lung except for a small area of air-bearing tissue above the clavicle. The entire left thorax was filled with an empyema pocket reaching from above the third rib posteriorly to the eleventh inferiorly.

Nine weeks after injury the patient was transferred to the surgical service, and pulmonary decortication was carried out. Exploration revealed a typical hemothorax with thick peel over all the pleural surfaces. The peel separated easily from the pulmonary surfaces but was densely adherent to the parietal pleura. Care was taken to free the diaphragm but no effort was made to remove all the peel from the parietal surfaces. Bleeding was troublesome. Complete pulmonary expansion was obtained and the chest closed with three suction catheters in place. These were removed in seventy-two hours. Upon discharge from the hospital twelve days later, vital capacity had returned to 2,700 c.c. He was seen six weeks later, and a roentgenogram at this time showed only residual pleural thickening at the base.

This case is of interest in that the hemothorax was unrecognized and misinterpreted as a massive empyema for almost nine weeks of treatment in two different hospitals. It also illustrates that a closed hemothorax will become infected spontaneously and the infection responds to intrapleural and parenteral penicillin, and further that once constrictive fibrino-pleurisy has become established, pulmonary re-expansion can only be gained by decortication. The histologic picture of the peel removed in this case is illustrated and discussed later in this paper.

Case 4.—A thirty-six-year-old man, an office worker, developed a spontaneous pneumothorax which rapidly became a hemo-pneumothorax of such magnitude that he spent most of the first three weeks of his illness in an oxygen tent. Aspiration of 1,000 c.c. of dark wine-colored fluid on the twentieth day relieved the dyspnea. During the next two weeks, five more aspirations were carried out. He was admitted to the Veterans Hospital six weeks after onset of his illness.

Roentgenograms on admission demonstrated a massive pneumothorax. Five additional weeks of intrapleural and parenteral penicillin with frequent aspirations of the chest failed to re-expand the lung or control the severe staphylococcic infection which developed during this treatment. The first aspirations on admission were sterile, but the subsequent cultures showed staphylococci despite the penicillin.

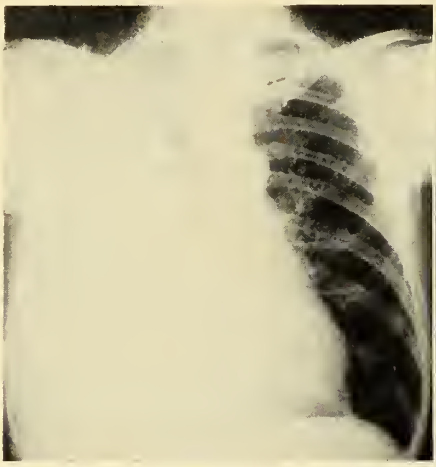

Fig. 3. Case 5. Roentgenogram on admission to hospital forty-nine days after injury. This shows the typical features of a massive hemothorax before attempted pleural drainage has created a pneumo-hemothorax. The only air-bearing lung remaining is in the upper medial portion of the pleural space. The remainder of the lung is completely collapsed in the paravertebral gutter.

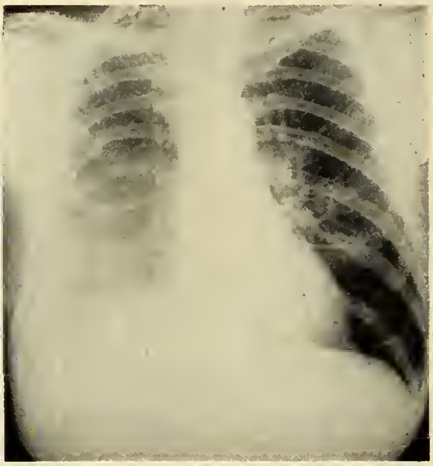

Fig. 4. Case 5. Roentgenogram three months after decortication. Lung is fully re-expanded, pleural space obliterated, considerable pleural thickening persists at the base. Peel was not removed from parietal pleural, and is thickest in this region.

Ten weeks after onset of the hemothorax, the patient was transferred to the surgical service and a decortication carried out. A typical hemothorax, grossly infected, was found. The peel separated easily from the visceral pleura but was densly adherent to the parietal pleura, from which it was removed only over the diaphragm. Excellent re-expansion was obtained and the chest closed with the usual three suction catheters.

Following decortication the patient's sepsis promptly subsided but six days later he again became febrile. A small basal pleural pocket was identified and drained by catheter. This patient's vital capacity just prior to decortication was 1,900 c.c. Two months later it was 3,000 c.c.

This case illustrates several interesting features. Hemothorax can occur without any trauma. Here, with the development of the spontaneous pneumothorax, an adhesion must have torn and subsequently bled. The true nature of the condition was unrecognized even after aspiration of a liter of "dark wine-colored fluid." On admission to the second hospital, the hemothorax, now six weeks old, became infected despite intrapleural and parenteral penicillin. Pulmonary re-expansion could not be accomplished until decortication was carried out, which in turn obliterated the pleural pocket and controlled the infection. The histologic picture of the peel will be discussed later.

Case 5.—A fifty-five-year-old male was admitted to the Veterans Hospital six weeks after falling when he tripped over a railroad tie. At the time of the fall on June 20, he sustained several minor lacerations, including one on the right anterior chest. He continued to work without noticeable symptoms until July 8 when dyspnea, inspiratory chest pain, weakness and weight loss incapacitated him. These symptoms persisted for the next month, accompanied by fever and progressive weakness. He entered the hospital on August 8. On admission, 500 c.c. of syrupy dark-red fluid was aspirated which contained hemolytic staphylococcus aureus.

Figure 3 shows the massive hemothorax present on admission. Decortication was carried out with complete re-expansion of the lung. The peel separated readily from the lung and with some difficulty from the diaphragm. It was not removed from the remaining parietal pleura. The usual closure with catheters was carried out. Healing per prium occurred, and the patient was ambulatory by the ninth postoperative day.

Figure 4 is a roentgenogram made three months after decortication. At this time the patient was asymptomatic and had regained 14 pounds.

This case is of interest because of the slow development of a massive hemothorax following minimal trauma and its subsequent spontaneous infection by hemolytic staphylococcus aureus. This man was septic on admission to the hospital and had been so for a month. His sepsis continued despite penicillin parenterally, but promptly subsided following decortication.

Case 6.—A fourteen-month-old infant was admitted to St. Mary's Hospital three weeks after the onset of left-sided pneumonia which had been followed by pleural effusion in six days. The infant had been treated with sulfamerizine from the time of onset of pneumonia, with normal temperature after the third day. The pleural effusion became massive with displacement of the heart to right, and catheter drainage was instituted the third week but was ineffective.

A roentgenogram on admission showed a massive clotted fibrino-thorax with marked displacement of the mediastinum. At this time the child's respiratory rate was above 60 in an oxygen tent. The pulse was 130 to 150 per minute. Thoracotomy with evacuation of the fibrin was performed under local anesthesia. Only partial expansion was obtained, as formal decortication could not be carried out completely. Postoperatively, the infant did well out of oxygen, and on discharge seven weeks later, the chest was closed and the left lung was functioning despite the greatly thickened pleura remaining. Pulmonary function could have been re-established much more quickly and effectively in this case

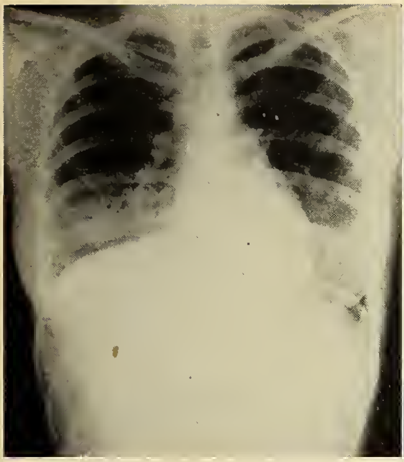

Fig. 5. Case 7. Roentgenogram one week after onset of illness showing parenchymal infiltration in right lower lung field. Etiology at this time undetermined. Sputum negative for acid-fast organisms on smear and concentration.

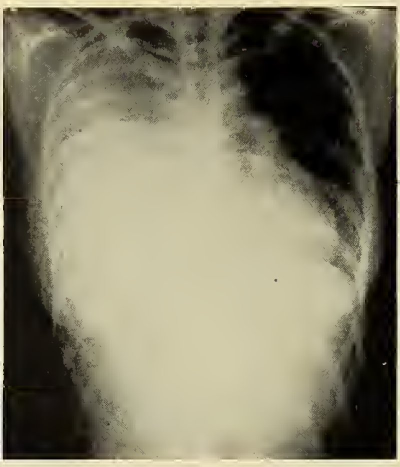

Fig. 6. Case 7. Roentgenogram seventeen days after onset of illness. Note the similarity to Figure 3. Massive pleural effusion gives same x-ray pictures as massive hemothorax and compresses lung in same fashion.

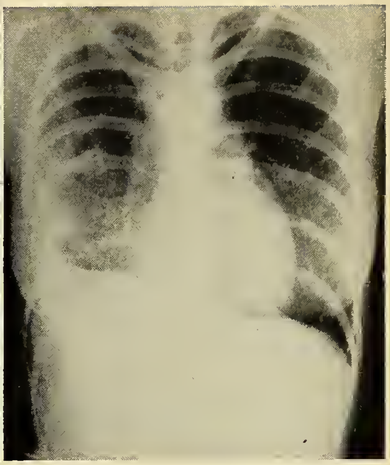

Fig. 7. Case 7. Chest roentgenogram three months after decortication. Lung expanded, pleural space obliterated, tuberculous process in lower lobe clearing.

had the patient been old enough to withstand wide costectomy with pulmonary and mediastinal liberation without great anesthetic difficulties.

Comment—The type of empyema developing in this case has become much more frequent since the introduction of sulfonamide drugs. Occasionally in the presulfonamide days, a pneumonic empyema would undergo autosterilizaton and fibrinous organization and clotting, with the production of a large intrapleural mass of gradually organizing fibrin. Subsequently, infection usually recurred with suppuration and the development of a massive chronic empyema overlying a collapsed bound-down lung. With the use of sulfonamides, however, sterilization of the empyema has occurred much more frequently, and fibrino-thorax has developed if the effusion has not been promptly and completely evacuated by adequate drainage.

Autosterilization or sterilization by the sulfonamide drugs occurs gradually and incompletely, during which time exudation of serum and fibrin continues, with organization of the fibrin overlying the pleural surfaces proceeding rapidly. Each day the irritating effusion persists, more fibrin is laid down on the pleural surfaces, and more of it undergoes fibroblastic organization. A constrictive fibrino-pleurisy is occurring. Drainage of the pocket after this process is well established (sometimes as early as three weeks) fails to re-expand the lung, and chronic empyema is established unless the lung be freed by decortication at time of drainage.

It may be that the treatment of early empyema by parenteral and intrapleural penicillin and needle aspiration will not result in this process so frequently. With penicillin, much more rapid sterilization is obtained, and in those patients I have followed, whose empyemas have promptly become sterile with penicillin, the purulent effusion has rapidly thinned out with loss of fibrin content and ever-increasing ease of aspiration. Satisfactory pulmonary expansion has occurred in these cases. Penicillin will not dissolve the fibrin already deposited on the pleural surfaces nor will it prevent its deposition unless it promptly sterilizes the pleura and the effusion is completely aspirated.

Case 7.—A nineteen-year-old girl was admitted to St. Mary's Hospital after seventeen days of illness which had its onset with pain in chest, dyspnea, mild dry cough, and fever. At time of admission she had been on a sulfonamide drug two weeks. Figure 5 shows the chest roentgenogram taken one week after onset of illness. Figure 6 shows the chest at time of admission. The patient was quite toxic with temperature ranging up to 103° Fahrenheit at this time. Aspiration revealed cloudy amber fluid, and 650 c.c. were removed.

Continued aspirations failed to expand the lung, and on the thirty-ninth hospital day decortication was carried out (fifty-three days after onset). The large pleural pocket contained syrupy, greenish-yellow, slightly sour fluid with several fibrin masses floating free. The peel was from 3 to 8 mm. thick and separated easily from the visceral pleural surfaces and diaphragm. It was not removed from the parietal pleura. Figure 7 shows the chest three months later.

Postoperatively the patient did very well. The operative wound healed by first intention, and on the eighth postoperative day the patient became completely afebrile and remained so for the first time since the onset of the illness.

Initially the possibility of a tuberculous pneumonia with tuberculous pleurisy was suspected. The first pleural fluid removed was sterile. Repeated sputum examinations were negative for acid-fast organisms. Later a nonhemolytic streptococcus was recovered from the pleural effusion. At the time of decortication, the diagnosis was postpneumonia empyema with constrictive fibrino-pleurisy. Culture of the pus obtained, however, revealed both non-hemolytic streptococcus and tubercle bacilli, and the peel showed tuberculosis on microscopic examination. Due to the development of sensitivity to penicillin, this drug had been discontinued ten days before operation. Three days preoperatively, simply as the only available antibiotic which the patient could tolerate, 1.8 grams of streptomycin daily was started. This was continued for seven days postoperatively. She also was given 400,000 units of penicillin daily along with benadryl for the first eleven postoperative days, as tests had shown the streptococcus to be insensitive to

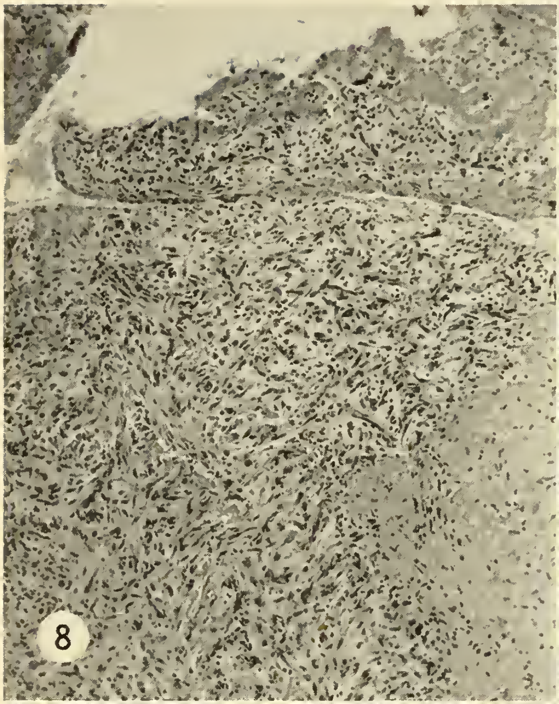

Fig. 8. Section of a peel removed twenty-one days after formation of a sterile hemothorax (Case 2). Note absence of blood vessels and leukocytes. Masses of fibrin are still being actively infiltrated by fibroblasts.

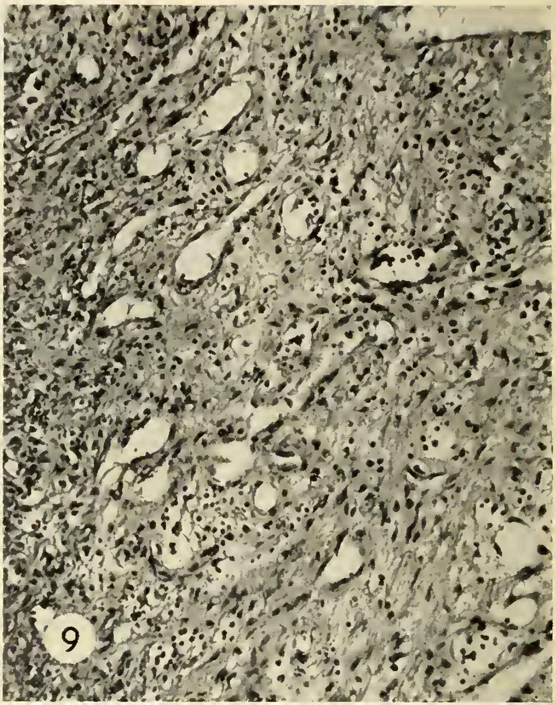

Fig. 9. Peel removed in Case 3. Hemothorax nine weeks old. Note rich vascularity, complete infiltration of fibrin by fibroblasts, and scarcity of leukocytes. Removal of this peel was accompanied by brisk bleeding.

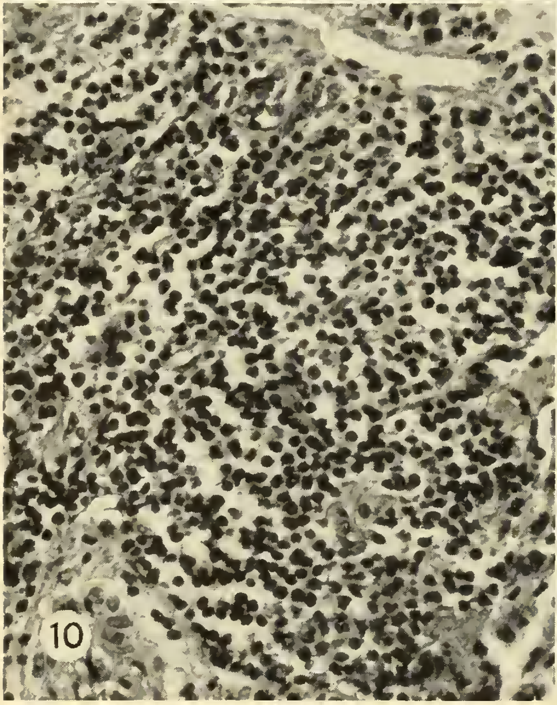

Fig. 10. Section of peel removed in Case 4. Infected hemothorax of ten weeks' duration. Leukocytic infiltration very well shown, vascularity marked.

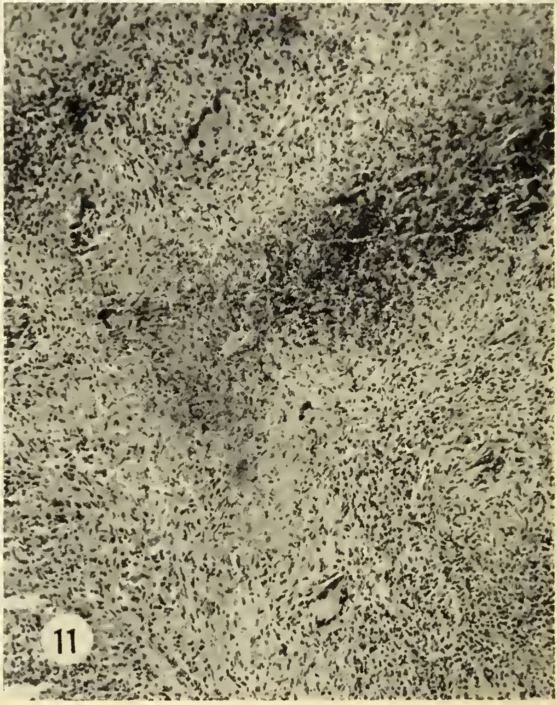

Fig. 11. Case 7. This peel is approximately eight weeks old. It shows the same basic features as those arising in hemothorax and in pyogenic empyemas. In addition, the giant cells and necrosis of tuberculosis are apparent.

streptomycin but very sensitive to penicillin. During these days the penicillin was well tolerated.

This patient certainly was saved a very prolonged and difficult course of chronic tuberculous empyema complicated by mixed pyogenic infection. She unquestionably would have come to thoracoplasty for obliteration of the large pleural space and even at final recovery would have been left with a bound-down seriously crippled lung. However, decortication of the lung in tuberculous empyemas is not unreservedly recommended. The considerations involved in the treatment of tuberculous empyema are beyond the scope of this paper.

Comparison of the fibrino-fibrous peels or membranes from the pleural surfaces of the lungs in these cases is of interest:

In the first case, no opportunity for a peel to form was allowed and there is none to show. Case 2 was twenty-one days old, that is, the hemothorax had existed twenty-one days. Figure 8 shows this peel. Note the fibrin being invaded by the actively poliferating fibroblasts and the absence of new blood vessels. This is the ideal time for decortication as the fibroblastic proliferation has advanced far enough to make the peel easy to remove. It wipes away in sheets. Bleeding does not occur as the vascular proliferation from the lung has not yet occurred to any degree. Infection had not occurred in this case, and we find few leukocytes in the peel.

Case 3, on admission, showed hemolytic streptococci on aspiration of the hemothorax, but subsequently became sterile. The microscopic sections show advanced fibrosis of the peel with some leukocytic infiltration on the lung side, but little deep in the peel. The vascularity is marked, and Figure 9 shows this intense vascular proliferation. These cases tend to bleed more during decortication. This peel is nine weeks old.

In Case 4 futile efforts were made to evacuate the hemothorax by aspiration. The hemothorax became infected with staphylococcus aureus hemolyticus, coagulase positive, and for some time prior to decortication, was septic. This peel, ten weeks old, shows the same general fibrosis and vascularity as the peel in Case 3 but in addition shows intense leukocytic infiltration. Figure 10 shows this leukocytic infiltration and the usual vascularization.

The peel from Case 7 on low-power magnification shows the same general features as these others. In addition, small miliary tubercles, giant cells, and microscopic areas of necrosis characteristic of tuberculosis are seen. These features are well shown in Figure 11. In Case 4, the modification of a constrictive fibrinopleurisy membrane or peel by pyogenic infection is demonstrated. This section of Case 7 demonstrates a tuberculous infection of a similar membrane or peel.

In comparing these sections it is readily apparent that all represent the same process, namely, the progressive fibrosis of a fibrin layer deposited over the pleural surfaces. Vascularization follows, and the various infecting organisms elicit the same tissue responses here as they do in other tissues. It is the fibrosis, however, that binds down the lung and creates thereby the pleural pocket which leads to chronicity.

In summary, it is well to emphasize that fibrino-pleurisy will occur whenever an effusion of some magnitude persists in the pleural space long enough for fibrin to be laid down over the pleural surfaces and become organized. Once this process is well established, simple drainage by whatever means frequently fails to bring about pulmonary re-expansion with obliteration of the pleural pocket. Chronic empyema ensues and persists until the space is obliterated. This can be accomplished by either collapsing the chest wall into the pocket or liberating the lung and allowing it to reoccupy the space. Modern anesthesia and antibacterial agents have made excision of the empyema pocket feasible. This allows re-expansion of the lung. Respiratory capacity is salvaged by this procedure and hospital stay and disability greatly shortened. Decortication is applicable to bacterial empyemas resulting in constrictive fibrinopleurisy as to those developing secondary to a clotted hemothorax. Streptomycin may bring certain tuberculous empyemas occurring without underlying cavitary disease into the same category as other becterial empyemas.

Finally, here is a word of recommendation for early adequate drainage of all pleural effusions, by frequent aspiration till the pus is too thick for the needle and then, if necessary, by costectomy. The best decortication is the one avoided by early adequate pleural drainage, and the best "deribbing and unroofing" is the one avoided by decortication if the needle and tube have been either too little or too late.

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Discussion

L. HAYNES FOWLER, M.D.: This has been very interesting to me. In the army we had quite a little experience with traumatic hemothorax, chiefly with noninfected cases. I can only reiterate what Dr. Jensen has said. In following the work of Dr. Burford who was stationed near us, I found that the results from decortication were remarkable. The ease with which decortication of the lung is accomplished in the early cases is really astounding. It is a most satisfying experience to open a chest and see the lung bound by a thick fibrinous layer. With all the pressure the anesthetist can give, the lung will not expand. Peel that layer off, the anesthetist expands the lung, and it comes out like a balloon right under your eyes.

Later in the war we had a few cases of infected pleural effusion and empyema in which we did this procedure. Although the x-ray pictures did not look as nice as those with simple hemothorax, the clinical results were good in the few cases we had. I haven't had the opportunity to do any since returning to civilian life. It is a question of judgment as to how long to wait for expansion before operating. I am sure Dr. Jensen will agree that the sooner we can decorticate, the easier it will be.

I was glad to hear Dr. Jensen discuss the question of sterile pleural effusion. I recently had a case of a young man who had a pneumonia. The pneumonic process had cleared up as far as the internist could tell, but the patient had effusion in the chest and was running a septic temperature. I aspirated the chest and took off a couple of hundred cubic centimeters of clear straw-colored fluid. This was reported by the laboratory as negative as far as smear and culture were concerned. The patient continued to run a septic temperature, and an x-ray showed a large shadow due to pocketed fluid in the posterior right chest. He had been on penicillin. I decided to aspirate again and aspirated 900 c.c. of clear sterile fluid. The pocket disappeared and the temperature dropped to normal and the patient got well. I don't know how to explain it, but we may be coming to the stage with penicillin and sulfonamides when we will have to pay more attention to complete, thorough, and more frequent aspiration of apparently sterile fluid from the chest.

I want to thank Dr. Jensen for a very fine and interesting presentation.

Thomas J. Kinsella, M.D.: There is one point which I would like to bring out. There is considerable difference between the thin serous effusion of a tuberculous pleurisy with effusion and the fluid of high fibrin content following a pneumonia or in a hemothorax. The former, lying in a pleural membrane but slightly damaged, frequently absorbs in a matter of days, weeks or months, leaving but little evidence of its former presence except an obliterated pleural space. The latter, because of the high fibrin content and its deposit on the pleural surfaces, soon comes to lie in a fibrin-lined pocket from which it is not absorbed. If the fluid is not removed, additional fibrin is deposited and the lung becomes bound down in the collapsed position and loses its function.

To avoid this, aspiration must be started early and carried out frequently (once or twice daily) and completely. Only in this way can we obtain results following empyema and hemothorax by aspiration alone. Once fibrin becomes deposited in appreciable amounts, it tends to increase, and then you are in a jam. If bacteria were present, digestion of the fibrin mass by enzymes from the bacteria and the leukocytes might take place, but this does not occur in the sterile exudates. Fibrin solvents may be of use, but if results are not obtained promptly, decortication is mandatory if the function of the lung is to be restored.

Nathan K. Jensen, M.D.: The remarks of Dr. Fowler are well made. In the one case presented tonight, the pleural fluid contained a nonhemolytic streptococcus which misled us and we missed the tuberculous infection until we obtained sections of the peel.

Doctor Kinsella I would answer this way. If a patient developing an empyema never gets any chemotherapy, the migration of leukocytes into the fluid is intense and it rapidly becomes purulent fluid. The leukocytes liberate trypsin which digests the fibrin. If the pleural effusion is sterilized by chemotherapy or if it occurs as the result of hemorrhage, the fibrin content remains high. Unless it is quickly and completely aspirated, fibrin is laid down on the walls of the pocket, and organization proceeds rapidly.

Humanity has always shunned responsibility. Even today, though there is widespread intellectual acceptance of the concept that much disease is preventable, the emotional attitude is not much altered and illness is considered an intrusion, a misfortune due to factors beyond control of the individual. As a whole we have not yet awakened to the idea that the health of men and women is their own responsibility.—Edward J. Stieglitz, M.D., A Future for Preventive Medicine, The Commonwealth Fund, 1945.

TEN-YEAR HEART STUDY AT UNIVERSITY

About 300 Saint Paul and Minneapolis businessmen between the ages of forty-five and fifty-four are being selected to serve as volunteer "human guinea pigs" at the University of Minnesota in a ten-year study of factors influencing the development of arteriosclerosis and hypertension.

The study, conducted under the direction of physiologist Dr. Ancel Keys, will attempt to discover whether habits of diet and physical activity will prevent or delay the development of degenerative cardiovascular disease. Effects of worry and nervous tension also will be carefully studied.

Men participating in the study will undergo a thorough examination of their cardiac and vascular conditions once each year for five years at the University laboratory of physiological hygiene, then will be checked intermittently by investigators for the next five years. Invitations to participate in the study have been sent out to employes of twenty-three Twin Cities business organizations who are in the proper age group. Participants will be selected from the volunteers.

A special group of the 300 participants will be composed of thirty men who have been following a systematic program of exercise for a considerable period. From this group Dr. Keys hopes to obtain information as to any beneficial or harmful effects of systematic exercise after the age of forty.

Supported by the United States Public Health Service, the project has been endorsed by the Heart Committee of the Minnesota State Medical Association and by the Hennepin and Ramsey County Medical Societies.

USE OF RURAL HOSPITALS INCREASES

Rural Minnesotans are losing their "prejudice against going to a hospital except as a last resort."

That is the conclusion of a University of Minnesota sociologist who has just completed a study of the distribution and use of Minnesota hospitals.

The greatest increase in the use of hospital beds between 1930 and 1946 has been in rural counties with no towns of more than 2,500 population. Hospital beds in those counties were only 50 per cent used in 1930; they were 74 per cent used in 1946.

The study also showed that there are fewer small hospitals in the state than in 1930, but that the number of hospital beds has increased from 24,974 to 31,952. Of this increase of 6,978 beds, 80 per cent have been for mental patients. In spite of additional facilities there are still thirteen rural counties without hospitals. Two-thirds of the hospital beds in Minnesota are in the four counties with the largest urban centers: Hennepin, Ramsey, St. Louis and Olmsted.

Small general hospitals with fifteen beds or less—too small for efficient operation—have tended to disappear, the study showed. There were less than half as many in 1946 as there were in 1930.

Anatomy: Figure of male viscera from Loys Vasse's Anatomical Compendium, 1553—Courtesy, The Bettmann Archive.

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In Memoriam

ARNT G. ANDERSEN

Dr. Arnt G. Andersen of Minneapolis passed away November 1, 1947 at the age of sixty-six.

Dr. Andersen was born in Minneapolis, December 31, 1880. He graduated from the University of Minnesota medical school in 1904 and interned at St. Barnabas and Swedish hospitals in Minneapolis. He practiced at Hillsboro, North Dakota, from 1904 to 1914 before moving to Minneapolis. He took postgraduate work in Vienna in 1910 and again in 1927.

He was a member of the American College of Surgeons, the Hennepin County Medical Society, the Minnesota State and American Medical Associations. He had a captain's commission during World War I and served on the Mexican border and in the national home guard. For his services in World War II, he was awarded the selective service medal and certificate of merit. He was a member of Our Saviour's Lutheran church, Scottish Rite bodies, Zuhrah Temple of Shriners' Legion of Honor and Masonic Order of Hillsboro, North Dakota.

Dr. Andersen is survived by his wife, two sons, Arthur R. of Minneapolis, and Wagner L. of St. Cloud, and a daughter, Mrs. Noel M. Kiefer of Skokie, Illinois.

H. MILTON CONNER

Dr. H. Milton Conner, former consulting physician at the Mayo Clinic and Assistant Professor of Medicine at the Mayo Foundation, died October 18, 1947, following an illness of fifteen years.

Dr. Conner was born May 21, 1881 at Morrison, Illinois. He attended high school at Merrill, Kansas, and the Hiawatha Kansas Academy and obtained his M.D. degree in 1909 at the Kansas Medical College, Topeka, Kansas. His interne year was spent at Stormont Hospital in Topeka, and he took postgraduate work as a special student in pathology at the College of Physicians and Surgeons of the University of Illinois in 1910. He was Professor of Pathology at the Kansas Medical College from 1910 to 1913 and practiced in Topeka from 1910 to 1918. He became Assistant in Surgical Pathology at the Mayo Clinic in 1918 and Assistant Professor of Medicine at the Mayo Foundation in 1920.

Dr. Conner was a fellow of the American College of Physicians, the Central Society for Clinical Research, the Minnesota Society of Internal Medicine, the Southern Minnesota Medical Association, the Olmsted-Houston-Fillmore-Dodge County Medical Society and the Minnesota State and American Medical Associations. He was also a member of Sigma Xi.

Dr. Conner married Pana Charlotte Adamson, June 18, 1902. He is survived by his widow and two daughters, Mrs. J. Stuart McQuiston of Cedar Rapids, Iowa, and Mrs. H. C. Ochner of Indianapolis, Indiana.

HARRY LEE D'ARMS

Dr. H. L. D'Arms of Hector, Minnesota, died September 9, 1947 at the University Hospital. He was seventy-nine years old.

Dr. D'Arms was born in Stillwater, Minnesota, May 14, 1868. After graduating from the Stillwater High School, he attended the medical department of the University of Michigan in 1888. In 1891 he transferred to the University of Minnesota medical school, from which he graduated in 1892. After a year's internship at the Minneapolis City Hospital, he practiced for five years at McKinley and Eveleth before going to Hector in 1898. From 1910 to 1912 he served as county coroner.

On September 27, 1893, he married Maude O. Bearley of Minneapolis and both lived to celebrate their golden wedding in 1943. He is survived by his wife and two brothers.

Dr. D'Arms was an ardent worker for Hector and its community. In early days, he was organist for several churches in the town. In World War I, a boys and girls victory campaign was organized in Renville County with Dr. D'Arms as chairman. With the assistance of Mrs. D'Arms, more than their quota was raised.

He was a member of the Camp Release County Society, the Minnesota State and American Medical Associations.

PAUL W. GAMBLE

Dr. Paul W. Gamble, a member of the Gamble Clinic at Albert Lea, Minnesota, passed away September 14, 1947, at the age of forty-nine. Death was due to cancer of the lung. His death followed that of his brother, J. Will Gamble, some six weeks previous who was also a member of the Gamble Clinic.

Dr. Gamble was born July 25, 1898, in St. Paul. He graduated with a degree of B.S. from the University of Minnesota in 1922 and an M.D. in 1924. Internship was served at Abbott Hospital, Minneapolis, and the Ancker Hospital, St. Paul.

In 1924, he began practicing in Albert Lea with his brothers, Will and Ross, in the Gamble Clinic. He was active in numerous religious, civic, fraternal, and professional organizations. He was a member of the First Baptist Church and served as the president of its Board of Trustees. He served one term as a member of the Albert Lea district school board, was a member of the Chamber of Commerce, the Rotary Club and a leader in the Shellrock district of the Boy Scouts of America. During World War I, he was in the Student Army Training Corps and belonged to the American Legion.

In the past, he was president of the medical staff of Naeve Hospital and at the time of his death was a member of the planning board for the hospital addition now under construction. He was president of the Freeborn

(Continued on Page 1304)

FOR BETTER NUTRITIONAL HEALTH IN THE AGED

Impaired strength and poor general health in the aged, which have so erroneously become associated with senility, are in reality often due to no more than a state of subnutrition. Food dislikes, personal idiosyncrasies, masticatory difficulties, and digestive abnormalities are the usual contributing factors. The use of an easily digested, nutritious food supplement can do much in preventing these nutritional deficiencies, and in giving new strength and vigor to patients well advanced in years.

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FAT	31.5 Gm.	RIBOFLAVIN	2.00 mg.
CARBOHYDRATE	64.8 Gm.	NIACIN	6.8 mg.
CALCIUM	1.12 Gm.	VITAMIN C	30.0 mg.
PHOSPHORUS	0.94 Gm.	VITAMIN D	417 I.U.
IRON	12.0 mg.	COPPER	0.50 mg.

*Based on average reported values for milk.

(Continued from Page 1302)

County Medical Society at the time of his death and a member of the Minnesota State and American Medical Associations.

In 1924, Dr. Gamble married Jeanette B. Northam of Minneapolis who, with three children, survives.

ALFONSO GRANA

Word has been received of the death of Dr. Alfonso Graña, which occurred on August 26, 1947, in Uruguay.

Dr. Graña was born June 3, 1912. He came to the Mayo Foundation in November, 1945, on a fellowship of the Guggenheim Memorial Foundation. Previous to this time he was an investigator for the Institute of Experimental Medicine at Montevideo, Uruguay. While he was in Rochester Dr. Graña studied at the Laboratory of Physiology at the Institute of Experimental Medicine. He left in July, 1946, to return to Uruguay.

HOWARD ELMER JOHNSON

Dr. Howard E. Johnson of Bird Island died from a heart attack, October 26, 1947, at the age of thirty-six.

A native of Benson, Minnesota, Dr. Johnson practiced at Ortonville before locating in Bird Island four years ago.

Dr. Johnson was secretary of the Renville County Medical Society and a member of the Minnesota State and American Medical Associations. He is survived by his wife and two children—Mary, aged five, and Francis, aged three.

NIELAMBER C. JOSHIE

Dr. N. C. Joshie, a native of India and a former fellow at the Mayo Foundation, Rochester, Minnesota, was assassinated recently in India.

He was born at Almora, India, in 1888. He received his medical degree from the Medical College of Lahore, Punjab University, India, in 1913. After serving internships in Indian government hospitals from 1913 to 1917, he took a three-year fellowship in surgery at the Mayo Foundation. He returned to India in 1920, and it is reported he had planned the construction of a clinic at Dehra Dun in India when death came.

EDWIN JOHN KEPLER

Dr. E. J. Kepler, a member of the staff of the Mayo Clinic, was found dead aboard his cabin cruiser on Lake Pepin on October 20, 1947.

Dr. Kepler was born January 22, 1894, in Erie, Pennsylvania. He obtained a B.S. degree from Pennsylvania State College in 1916 and an M.D. degree from the University of Minnesota in 1924. After interning at the Philadelphia General Hospital, he took a three-year fellowship at the Mayo Foundation. He became an Associate in a section of the Division of Medicine in the Mayo Clinic and an Assistant Professor of Medicine in the Mayo Foundation.

Dr. Kepler was a member of the Olmsted-Houston-Fillmore-Dodge County Medical Society, the Minnesota State and American Medical Associations.

He is survived by his widow and two daughters.

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As you know, surfaces of glasses reflect light. This in turn, produces out-of-focus "ghost images." These reflections interfere with the transmitted image light, reduce definition and contribute to eye strain.

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2. **Improves image definition.**
3. **Increases transmission of light—more transparent glass.**
4. **Hardens the lens surfaces—reducing surface scratching.**
5. **Provides better vision—less eye strain.**

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MUHLENBURG KELLER KNAUFF

Dr. M. K. Knauff, of Saint Paul, passed away July 17, 1947, at the Miller Hospital after an illness of six weeks. Muhlenburg Keller Knauff was born in Philadelphia, Pennsylvania, on May 16, 1868. He was the son of Henry W. and Catherine Eliza (Keller) Knauff, with whom he came to Saint Paul in 1883. Here he completed his high school education and then returned to Philadelphia University for his academic education. In 1895 he was graduated from the University of Minnesota Medical School, and then served his internship at Ancker Hospital, Saint Paul.

Dr. Knauff was associated with Dr. Bertram Sippy prior to serving in the Spanish American War as the Regimental Surgeon of the 1st Cavalry Division at Fort Keogh, Montana. On June 20, 1899, he was married to Anna Lillian Munson. In 1901 he practiced medicine and operated the hospital in Two Harbors, Minnesota. During this period he served two terms as the mayor of Two Harbors and during the severe outbreak of typhoid fever in 1912, he was instrumental in securing for the city a safe water supply.

In 1914 he sold his hospital and with Mrs. Knauff went to Germany for further study. Later he went to England where he took postgraduate work in orthopedics under Sir Robert Jones. He returned to Saint Paul and established a medical practice in which he was active until May 27, 1947, when taken ill.

In 1945 he was honored with the fifty-year club plaque. He was a member of Nu Sigma Nu Medical fraternity. He served generously on the out-patient staff of Ancker Hospital and Wilder Charity Dispensary.

Dr. Knauff was a charter member of the Reformation Church of Saint Paul and took an active part in all the activities of the church. He was also active in the Boy Scout work of the church, and at the time of his death, was a member of the Board of Directors of the Northwestern Theological Seminary of the United Lutheran Church of America. He was a member of the Spanish American War Veterans' Wirth Bagley Post No. 2, Saint Paul.

Dr. Knauff was especially fond of music and poetry. He had written poems as a hobby for many years and was a member of the League of Minnesota Poets.

He is survived by his wife, Anna, and a sister, Mrs. Emily Marshall of Minneapolis.

JAMES ROLLIN MANLEY

Dr. James R. Manley, well known obstetrician and gynecologist of Duluth, passed away October 21, 1947, at the age of sixty-two. He had been elected first vice president of the Minnesota State Medical Association to take office in 1948.

Born March 21, 1885, in Bellona, New York, Dr. Manley came to Duluth in 1891. He obtained his medical degree from the University of Minnesota in 1908 and interned at St. Mary's Hospital, Duluth. After practicing at Niagara, North Dakota, from 1909 to 1913, he took postgraduate work at the Chicago and New York Lying-In Hospitals. He also spent a year in Vienna in 1925.

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Dr. Manley was a member of the American College of Surgeons, the American Board of Obstetrics and Gynecology, the Minnesota Obstetrical Society, the Interurban Academy of Medicine, the Central Association of Obstetricians and Gynecologists, and in 1937 was president of the St. Louis County Medical Society. He was also a former chief of staff of St. Luke's and St. Mary's Hospitals. In 1929, he was called to give a series of lectures on obstetrics by the Universities of Nebraska and Oklahoma. He was a member of the St. Louis County Medical Society, the Minnesota State and American Medical Associations.

In 1910, Dr. Manley married Dorothy L. Lucke, who survives him. He is survived also by a daughter, Mrs. Jesse D. Bradley, and a son, James R. Manley, Jr., a brother, Howard G. Manley, and his father, R. F. Manley—all of Duluth.

WILLIAM AUSTIN O'BRIEN

Dr. W. A. O'Brien, Professor of Preventive Medicine and Health Education at the University of Minnesota Medical School and well known for his radio broadcasts and syndicated health articles, died suddenly of a cerebral hemorrhage on November 15, 1947, at the age of fifty-four.

Born in Fairbury, Illinois, February 28, 1893, Dr. O'Brien attended St. Bede college at Peru, Illinois, and Notre Dame University. He graduated from the St. Louis University School of Medicine in 1913 and interned at Mt. St. Rose Hospital and St. John's Hospital, both in St. Louis.

He practiced medicine in Detroit, Michigan, and served from 1919 to 1921 with the Detroit Department of Health. During World War I he served as first lieutenant in the Army Medical Corps with the 15th Cavalry at Fort Bliss, Texas.

He did postgraduate work at the University of Minnesota from 1921 to 1923 when he became an instructor in pathology. He became a full professor of Preventive Medicine and Health Education in 1940.

Dr. O'Brien was a member of the Board of Directors of the American Cancer Society and president of the Minnesota branch. For fifteen years he had been a member of the Board of the Hennepin County Tuberculosis Association and had been chairman of the Association's annual Christmas Seal Campaign for the past ten years.

Dr. O'Brien married Dorathy Beharrell on March 3, 1919, and to this union were born two children, William Austin, Jr., and Margaret Jean. Mrs. O'Brien passed away on March 10, 1934. On November 28, 1935, he married Virginia Mary Benton of Minneapolis.

He is survived by his wife, and six children, William Austin, Jr., Margaret Jean, Kathleen Ann, Patrick James, Michael Paul and Molly.

HENRY W. REITER

Dr. Henry W. Reiter of Shakopee, Minnesota, died October 30, 1947, at the age of eighty-three.

Dr. Reiter was born November 15, 1863, at Rockville, Minnesota. Graduating from the State Normal College at St. Cloud in 1889, he taught school for a year before attending the University of Minnesota medical school where he graduated in 1893. He practiced in Clara City and Kerkhoven from 1894 to 1897, then located at Shakopee.

Dr. Reiter served as a member of the Shakopee Board of Education, was city health officer at different times, and was coroner from 1914 until last year. During World War I, he was chairman of the local draft board.

In 1904, Dr. Reiter married Anna Mary Marschall, who died several years ago. They had no children.

Dr. Reiter was a member of the Scott-Carver County Medical Society, the Minnesota State and American Medical Associations.

ROBERT E. MORRIS

Dr. R. E. Morris, a physician on the staff of Mineral Springs Sanatorium at Cannon Falls since May, 1947, died at Colonial Hospital, Rochester, October 25, 1947, at the age of thirty-two.

Dr. Morris is survived by his wife and two sons, Robert Earl and John.

ROOD TAYLOR

Dr. Rood Taylor, well-known pediatrician of Minneapolis, passed away on May 2, 1947. Dr. Taylor had retired from active practice some time ago.

Rood Taylor was born May 12, 1885, at Columbia, South Dakota. He received his M.D. degree from the University of Michigan in 1910 and interned from 1910 to 1912 at the Northern Pacific Hospital in Brainerd, Minnesota. From 1914 to 1917, he was a teaching fellow in pediatrics at the University of Minnesota Medical School and received the degree of Ph.D. in Pediatrics from the University of Minnesota in 1917. He became an associate in pediatrics at the Mayo Clinic in July, 1917, and left in February, 1919, to practice pediatrics in Minneapolis. He was an associate professor of pediatrics at the University of Minnesota.

Dr. Taylor, before his retirement, was a member of the Hennepin County Medical Society, the Minnesota State and American Medical Associations, the American Pediatric Society, Phi Beta Pi, and Sigma Xi medical fraternities.

HENRY EDWARD WUNDER

Dr. H. E. Wunder, recently Medical Director of Mudcura Sanatorium at Shakopee, died in October while visiting a daughter in Milwaukee. He was seventy-seven years of age.

Born in Ohio, June 2, 1869, Dr. Wunder settled in Ely, where for twenty years he was physician for the Oliver Iron Mining Company. He then moved to Duluth where he practiced until the late twenties.

He was a former member of the Scott-Carver County Medical Society and the Minnesota State and American Medical Associations.

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◆ Reports and Announcements ◆

AMERICAN COLLEGE OF SURGEONS

The American College of Surgeons will hold six sectional meetings, one of which will be at the Nicollet Hotel, Minneapolis, March 15 and 16, 1948. These meetings are open not only to members but to the medical profession at large and to hospital personnel. Addresses and panel discussions will be held daily on subjects in each field of surgery by authorities in the various spheres. Headquarters are at 40 E. Erie Street, Chicago 11, Illinois.

ARMY INTERNSHIPS AND RESIDENCES

The Army in 1948 is offering 200 rotating internships, open to recent graduates. Pay schedules and allowances will be those of a first lieutenant.

There will also be 350 residences for periods of one, two, and three years in the various specialties. These will be available in the various Army General Hospitals to regular Army medical officers or applicants for the regular Army who are graduates of approved medical schools and have had a year of rotating internship in an approved hospital.

The Technical Information Officer in the office of the Surgeon General, Washington, D.C., may be contacted for further information.

CHICAGO MEDICAL SOCIETY

The Chicago Medical Society will hold its Fourth Annual Clinical Conference at the Palmer House, Chicago, on March 2, 3, 4 and 5, 1948.

This Conference represents an intensive four-day postgraduate course for the general practitioner and specialist with leading teachers from all over the United States.

The morning and afternoon lectures, the panel discussions, the clinicopathologic conference and the roundtable discussions each noon will cover newer methods of diagnosis and treatment which will be of interest to all physicians. The scientific and technical exhibits will be of the highest quality and attractively presented.

The Chicago Medical Society is extending all physicians a most cordial invitation to come to Chicago for the Conference. Reservations should be made direct with the Palmer House.

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PINE-AIRE LODGE *on the Gulf of Mexico*

held at the University of Minnesota Thursday, Friday and Saturday, November 20, 21 and 22, 1947.

With the increasing use of the consultation process as a technique used by all medical social workers, the subject selected for discussion was "The Consultation Process in the Field of Medical Social Work."

Leading the discussion was Mrs. Elizabeth E. Payne, associate professor of the graduate school of social work at the University of Southern California. In addition, several members of the group attending presented their own material on consultations in the fields of public assistance programs, public health or medical programs, federal or state hospitals and private hospitals or clinics.

MICHIGAN POSTGRADUATE CLINICAL INSTITUTE

The second annual Michigan Postgraduate Clinical Institute will be held at the Book-Cadillac Hotel, Detroit, Wednesday, Thursday and Friday, March 10, 11 and 12, 1948. Forty-nine outstanding clinicians and lecturers will present a concentrated three-day postgraduate course covering the newest developments in medicine, surgery, obstetrics, pediatrics, dermatology, ophthalmo-otolaryngology and general practice.

Two evening sessions will be held, the Wednesday night presentation being a "question box" and the Thursday evening program being a panel discussion on "First Aid to the Acutely Injured Patient."

All members of the American Medical Association and of the Canadian Medical Association are cordially invited to attend the Michigan Postgraduate Clinical Institute. No registration fee.

MISSISSIPPI VALLEY MEDICAL SOCIETY 1948 ESSAY CONTEST

The eighth annual essay contest of the Mississippi Valley Medical Society will be held in 1948. The society will offer a cash prize of $100, gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association who are residents of the United States. The winner will be invited to present his contribution before the thirteenth annual meeting of the Mississippi Valley Medical Society to be held in Springfield, Illinois, September 29, 30, October 1, 1948, the society reserving the exclusive right to first publish the essay in its official publication, the *Mississippi Valley Medical Journal* (incorporating the *Radiologic Review*). All contributions shall be typewritten in English in manuscript form, submitted in five copies, not to exceed 5,000 words, and must be received not later than May 1. 1948. The winning essay in the 1947 contest appears in the January, 1948, issue of the *Mississippi Valley Medical Journal* (Quincy, Illinois).

Further details may be secured from Harold Swan-

CHICAGO MEDICAL SOCIETY

Fourth Annual Clinical Conference

March 2, 3, 4, 5, 1948

Palmer House, Chicago

Four full days of lectures, panel discussions and clinicopathologic conferences presented by outstanding speakers and teachers from all sections of the country.

Scientific exhibits well worth seeing.

Technical exhibits on the newer drugs and equipment.

If you have attended previous Conferences, you probably are planning to come again in 1948. If you have not yet attended, you should make plans now to be present.

MAKE YOUR RESERVATION AT THE PALMER HOUSE

berg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Illinois.

MINNESOTA SOCIETY OF NEUROLOGY AND PSYCHIATRY

The regular meeting of the Minnesota Society of Neurology and Psychiatry was held at the Town and Country Club in Saint Paul on the evening of November 18, 1947.

Following dinner at 6:30 p.m., the scientific program was presented, consisting of two inaugural theses. Dr. Clifford O. Erickson, Minneapolis, presented as his thesis, "Psychoses Arising in Combat," while Dr. Philip K. Arzt, Saint Paul, spoke on "Electroencephalogram Findings in Central Nervous System Disease."

MINNESOTA SOCIETY OF ANESTHESIOLOGISTS

On August 30, 1947, the Minnesota Society of Anesthesiologists was formed. The following officers were elected: Ralph T. Knight, M.D., Minneapolis, president; T. Harry Seldon, M.D., Rochester, vice president; Frank Cole, M.D., Duluth, secretary-treasurer. All physicians interested in anesthesiology are invited to apply for membership in this society. Address such applications for membership to Frank Cole, M.D., chairman, Membership Committee, St. Mary's Hospital, Duluth.

SOUTHWESTERN MINNESOTA MEDICAL ASSOCIATION

The 1947 annual meeting of the Southwestern Minnesota Medical Association was held at Worthington on October 28.

Principal speaker at the evening meeting was Dr. Clarence Dennis, professor of surgery at the University of Minnesota Medical School, who talked on "Small Bowel Obstructions."

Dr. F. L. Schade, Worthington, was elected president of the association, while Dr. John Lohmann, Pipestone, was named president-elect. Dr. Gerrit Beckering, Edgerton, was elected vice president, and Dr. B. O. Mork, Jr., Worthington, was re-elected secretary-treasurer. Named to the board of delegates were Dr. Schade and Dr. S. A. Slater, Worthington, with Dr. Lohmann and Dr. Mork as alternates. Dr. C. L. Sherman, Luverne, and Dr. W. A. Piper, Mountain Lake, were chosen members of the board of censors.

WRIGHT COUNTY SOCIETY

The annual meeting of the Wright County Medical Society was held at the home of Dr. John Catlin in Buffalo on October 7. A scientific program was presented in the afternoon, followed by a banquet at six o'clock and election of officers of the society.

Dr. Hartwig Roholt, Waverly, was elected president; Dr. Vincent Ryding, Howard Lake, vice president, and Dr. John Catlin, Buffalo, secretary-treasurer. Twenty-two physicians attended the meeting.

Woman's Auxiliary

MEMBERS of the Medical Auxiliaries are deeply shocked to learn of the death of Dr. Wm. A. O'Brien. His friendly smile and talks will be missed by all.

Olmsted-Houston-Fillmore-Dodge

Members of the Olmsted-Houston-Fillmore-Dodge County Medical Auxiliary held their November meeting at the Mayo Foundation House. Miss Eleanor Smith, science instructor at the Kahler School of Nursing, led a discussion on "present-day problems of the nursing profession." "Raise the nurses' status," suggested Miss Smith. "By making the professional status of nursing more attractive, the present shortage of nurses will be eased," she said.

Mrs. W. A. Merritt of Rochester presided over the meeting and Mrs. A. B. Hagedorn poured.

On Tuesdays and Fridays members meet at the home of Mrs. M. S. Henderson in Rochester, and work on cancer dressings.

Redwood-Brown

The Redwood-Brown County Medical Society and Auxiliary entertained the Blue Earth and Nicollet County Societies on October 22 at New Ulm. After a dinner served at Turner Hall, the Auxiliaries enjoyed a program which included a talk by Mrs. Carl Fritsche on her recent trip to Alaska.

Renville County

The members of Renville County Auxiliary were entertained at a turkey dinner when the doctors met for their annual meeting at Hector on November 11. Guest speaker for the evening was Dr. W. A. Hanson of Minneapolis. While the doctors held their business meeting, members of the Auxiliary were entertained at the home of Dr. and Mrs. R. E. Erickson. Several subscriptions to *Hygeia* were taken.

IN wishing you a Merry Christmas this year we would capture for you as much of the old time holiday spirit as possible. Accept our sincere thanks for your generous patronage, which has been a source of real encouragement to us in 1947.

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Stearns-Benton County Medical Society
East Central Minnesota Medical Society
Hennepin County Medical Society
Hennepin County Bar Association

◆ Of General Interest ◆

Dr. L. M. Klefstad, formerly of the More Clinic in Eveleth, has opened an office for the practice of medicine in Greenbush.

* * *

In the middle of October, Dr. J. J. Stratte arrived in Isle to open offices for the practice of medicine. Dr. Stratte formerly practiced in Page, North Dakota.

* * *

Dr. Clyde Undine, Minneapolis, attended the regional meeting of the American College of Physicians, held at Milwaukee on November 14 and 15.

* * *

Speaker at a meeting of the Blue Earth County Medical Society in Fairmont on November 20 was Dr. J. H. Tillisch, Rochester, who discussed "Medical Observations in the Orient."

* * *

At the annual meeting of the New England Pathological Society in Boston on November 20, Dr. J. W. Kernohan, Rochester, presented a paper entitled "Mechanical Effects of Expanding Intracranial Lesions."

* * *

"Treatment of Injuries of the Peripheral Nerve" was the title of a paper presented by Dr. W. M. Craig, Rochester, at a meeting in Boston, November 15, of the Association of Military Surgeons.

* * *

Word has been received that Dr. W. L. Benedict, Rochester, has been elected executive secretary-treasurer of the American Academy of Ophthalmology and Otolaryngology.

* * *

"Film Identification" was the title of an address given by Dr. A. L. Abraham, Duluth, at a meeting of the Arrowhead Society of X-Ray Technicians on November 12 at St. Luke's Hospital, Duluth.

* * *

First president of the Marshall Community Chest is Dr. J. E. Murphy, Marshall, who was elected to office at the initial meeting of the new organization on October 9.

* * *

During the last week of October, Dr. W. L. Herbert, (Columbia Heights) Minneapolis, journeyed to Omaha, Nebraska, to attend a medical meeting and to visit relatives in that city.

Dr. Neill F. Goltz has become associated with Dr. A. W. Hilger and Dr. Jerome A. Hilger in the practice of otolaryngology and broncho-esophagology, with offices at 444 Lowry Medical Arts Building, Saint Paul.

* * *

Formerly with the Mesabi Clinic in Hibbing, Dr. Frederick Phillips has moved to Mora and become associated in practice with Dr. W. F. Nordman of that city.

* * *

Heart diseases and the Heart Hospital were discussed by Dr. E. D. Anderson, Dr. M. J. Shapiro, and Dr. Paul Dwan at a meeting of the Minneapolis Junior League on November 3.

* * *

Dr. Harry B. Zimmermann, Saint Paul, was elected president of the Western Surgical Association at its meeting in Colorado Springs early in December. Dr. Zimmermann has been the association's recorder for several years. He is succeeded in that office by Dr. Michael L. Mason, Chicago.

* * *

The University of Louisville honored Dr. J. E. McCoy, Thief River Falls, in October, by presenting him with a certificate commemorating his fifty years of service to the medical profession. Dr. McCoy was graduated from the school in 1897.

* * *

In Little Falls, Dr. G. M. A. Fortier has moved from his former offices into a new one-story office building upon which construction began last June. The new structure has a waiting room and four consultation rooms for examination and treatment.

* * *

Dr. E. J. Huenekens, Minneapolis, has resigned as medical director of parent counsel clinics for the Community Health Service and has been replaced by Dr. Edward Dyer Anderson, Minneapolis, pediatric psychiatrist.

* * *

A fellowship in pediatrics at the University of Wisconsin has been awarded to Dr. Edward Zupanc, former resident of Gilbert, who is completing an internship at St. Luke's Hospital in Duluth. A graduate of the University of Minnesota Medical School, Dr. Zupanc will begin the fellowship in January, 1948.

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The final organization meeting of the Minnesota Heart Association, Inc., was held November 1 in Hotel Lowry, Saint Paul. Elected as president of the organization was Dr. Paul F. Dwan, Minneapolis, while Dr. L. F. Richdorf, Minneapolis, was named first vice president.

* * *

In Austin on November 1, Dr. Paul A. Robertson moved into new office quarters on the second floor of a building housing the Holtz Drug Store. Dr. Robertson's former office location has become part of the studio of the Cedar Valley Broadcasting Company.

* * *

After practicing for a year and a half at Evansville, Dr. Gordon Paulson has moved to Panama to become resident physician at Gorgas Hospital and to take a special course in patholology. Before the war he interned at Gorgas Hospital.

* * *

A former Thief River Falls physician, Dr. William W. Johnstone returned to the United States in September after spending a year in Africa with the Sudan Interior Mission. He visited friends in Thief River Falls early in October.

* * *

Two meetings attended during October by Dr. Charles W. Vandersluis, Bemidji, were the annual meeting of the Interstate Postgraduate Association of North America, held in St. Louis, Missouri, and a meeting of the executive committee of the Minnesota Heart Association in Saint Paul.

Among the Minnesota physicians who attended the International Medical Assembly held October 14 to 17 in St. Louis, Missouri, were Dr. C. G. Sheppard, Hutchinson, and Dr. John Gridley, Glencoe, who drove to St. Louis together on October 13.

* * *

Among the speakers at the annual meeting of the American Cancer Society, held October 27 in New York City, were Dr. John J. Bittner, University of Minnesota Medical School, and Dr. C. P. Oliver of the University of Texas, formerly of the University of Minnesota.

* * *

Principal speaker at a meeting of the Red River Valley Medical Society, held in Thief River Falls on October 28, was Dr. Francis W. Lynch, Saint Paul, who talked on recent advances in the treatment of skin disorders.

* * *

Dr. Leo G. Rigler, chief of radiology and physical therapy at the University of Minnesota, presented the seventh annual Pancoast lecture at the University of Pennsylvania, Philadelphia, on November 6. His subject was "The Limitation of Roentgen Diagnosis."

* * *

Chest clinics were held in Owatonna on October 27 and in Austin on November 12 by Dr. Karl J. Pfuetze, superintendent and director of Mineral Springs Sanatorium, for former patients of the sanatorium and other interested local residents. Mantoux tests were administered without charge to all volunteers.

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Diagnosis and symptoms of rheumatic fever were discussed by Dr. Evelyn Harris, medical director of the Diagnostic Clinic for Rheumatic Fever, at a meeting in Saint Paul on October 31 attended by public and parochial school nurses and county and family nursing service nurses.

* * *

During the week of November 17, the Los Angeles Urologic Society at its Postgraduate Study Course heard Dr. J. R. McDonald, Rochester, present five papers entitled "Tumors of the Kidney," "Tumors of the Testis," "Carcinoma of the Urinary Bladder," "Carcinoma of the Prostate Gland" and "Cancer Cells in Urinary Sediment."

* * *

Two Mayo Clinic physicians, Dr. E. D. Bayrd and Dr. C. G. Morlock, presented papers at the November 11 meeting of the Iowa Division of the American Cancer Society in Des Moines, Iowa. Dr. Bayrd's paper was entitled "Therapeutic Use of Radioactive Isotopes," while Dr. Morlock's subject was "Cancer of the Stomach."

* * *

Authors of an article in a recent issue of *Radiology,* publication of the Radiological Society of North America, are Dr. Leo G. Rigler and Dr. G. M. Kelby of the Department of Radiology and Physical Therapy at the University of Minnesota Hospitals. Their article describes an early x-ray sign indicating the presence of bronchogenic cancer.

* * *

Dr. Bertha Van Hoosen, who was born in Rochester eighty-four years ago, is the author of a recently published book, *Petticoat Surgeon.* Educated at the University of Michigan, Dr. Van Hoosen has spent most of her professional life in Chicago since 1892 and has taught obstetrics, gynecology and embryology at Illinois, Northwestern and Loyola Universities.

* * *

Announcement has been made that Dr. Roy T. Pearson has become associated with his brother, Dr. B. F. Pearson in the general practice of medicine in Shakopee. Following his graduation from the University of Minnesota, Dr. Roy T. Pearson served in the navy in the Pacific, then returned after his discharge to take postgraduate work at the University Hospitals.

* * *

Founder of the first consumer-controlled hospital and clinic in the United States, Dr. Michael A. Shadid, Elk City, Oklahoma, was in Duluth on November 10 to speak to committeemen and solicitors of the Arrowhead Health Center, Inc. The health center has established new headquarters in Webber Hospital, which it has contracted to purchase for $100,000, and intends to offer various health services under a special membership plan.

* * *

A new addition to the staff of the Bratrud Clinic in Thief River Falls is Dr. John Lehman, formerly of Glendive, Montana, who joined the clinic early in October. After graduating from the University of Minnesota in 1943, Dr. Lehman served his internship at Miller

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Hospital, Saint Paul, and later held a fellowship in ophthalmology, after which he was associated in private practice with Dr. Frank E. Burch, Saint Paul.

* * *

New member of the staff of the Mankato Clinic is Dr. J. Donald Sjoding, who recently completed a three-year fellowship in otolaryngology and broncho-esophagology at the University of Minnesota Hospitals.

After graduating from the University of Minnesota in 1942, Dr. Sjoding served for two and a half years in the medical corps of the army air forces, fifteen months of the period in the India-Burma theater.

* * *

A graduate of the University of Minnesota Medical School in 1929, Dr. Frank P. Light has been appointed chief of the Department of Obstetrics and Gynecology of Long Island College Hospital, succeeding Dr. Alfred C. Beck, who recently resigned. Dr. Light joined the teaching staff of the Long Island College of Medicine in 1935 and was appointed clinical professor of obstetrics and gynecology in 1946.

* * *

Resignation of Dr. Edwin J. Simons, Swanville, as chief of the medical services unit of the State Division of Social Welfare, was announced on October 21. Dr. Simons has resumed his practice at Swanville, where he has been located since his graduation from the University of Minnesota in 1925.

In 1940 Dr. Simons was named a member of the state-wide medical advisory committee of the Division of Social Welfare, and he served in that capacity until January 1, 1942, when he was named chief of the medical services unit. In 1946 he was president of the Minnesota State Medical Association.

* * *

Recently named chief medical consultant for Europe of the International Children's Emergency Fund of the United Nations, Dr. H. F. Helmholz, Rochester, is now in Paris where he is helping to organize and direct a European technical staff of pediatricians, nutritionists, nurses and child welfare consultants in the work of child feeding, health and welfare. Dr. Helmholz has been granted a year's leave of absence from the Mayo Clinic to carry out the European assignment.

* * *

Speaking at a tuberculosis continuation course at the University of Minnesota on October 30, Dr. Percy T. Watson, director of local health services in the State Board of Health, declared that the health of Minnesota's 24,000 Indians and Mexicans was periled by a Federal cut in tuberculosis control funds. Because $30,000 was removed from Federal appropriations, the state sanatorium at Walker was being forced to turn away many Indians with active tuberculosis, Dr. Watson said.

* * *

Vice chairman of the newly organized Lake County Advisory Health Council is Dr. Ralph Papermaster, Two Harbors, who was elected to office at a meeting held in Two Harbors on October 7. The newly formed organization will promote individual and community health, co-operating with officials and agencies interested in public health, co-ordinating the school health program with the community program, and interpreting the health program to the community.

* * *

Physical examinations were done on 127 crippled children at an orthopedic clinic held October 25 in Crookston. At the clinic, which was under the sponsorship of the Red River Valley Medical Society auxiliary, physicians examined the following numbers of children from eleven northwestern counties: Polk, 37; Marshall, 27; Pennington, 12; Red Lake, 8; Roseau, 10; Kittson, 8; Norman, 17; Mahnomen, 8; Clearwater, 3; Clay, 1, and Becker, 2.

* * *

At the annual dinner meeting of the medical faculty of the University of Minnesota, held in Coffman Memorial Union on November 6, Dr. Victor H. Johnson, director of the Mayo Foundation at Rochester, was the principal speaker. Significant developments in the medical school during the past year were reviewed at the meeting, and an outline of future plans was discussed. New medical faculty members were introduced and welcomed at a reception after the dinner.

* * *

Four papers were presented by Dr. M. B. Dockerty, Rochester, at a postgraduate course on tumors held in Galveston, Texas, in November, by the Department of Pathology, the John Sealy Hospital Tumor Clinic and the Postgraduate Division of the School of Medicine of the University of Texas. The four papers were entitled "Malignancies of the Breast," "Carcinoma of the Cervix and Fundus Uteri," "Carcinoma of the Fallopian Tubes and Ovaries" and "Tumors of the Salivary Gland."

* * *

"Dr. Hagen Day" was celebrated on November 16 when residents of Butterfield and the surrounding area gathered to honor Dr. O. E. Hagen, seventy-six-year-old physician who has practiced in Butterfield for forty-four years. Plans for the occasion were worked out by representatives of the village churches, council, school board, community club and school faculty. A special program was held in the local high school auditorium in the afternoon, and tribute was paid to Dr. Hagen for his many years of work in the field of medicine.

* * *

Announcement has been made that Dr. S. C. G. Oeljen, Waseca, has been certified by the American Board of Ophthalmology and will remain in Waseca, limiting his practice to ophthalmology. A graduate of the University of Minnesota, Dr. Oeljen has also studied at Columbia University, New York City, at George Washington University, Washington, D. C., and at the Chicago Eye, Ear, Nose and Throat Hospital. He has taken postgraduate work in Vienna, Austria, under ophthalmologist Dr. Adalbert Fuchs.

* * *

One of sixty prominent Ripon College (Wisconsin) alumni to receive citations at the college's pre-centennial celebration November 1, Dr. J. Allen Wilson, Saint Paul, was honored by the college for his work in the field of

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medicine. A graduate of the college in 1922, Dr. Wilson began practicing medicine in Saint Paul in 1930. During the war he served in the navy, being discharged in 1946 with the rank of captain. At present he is a clinical instructor in medicine at the University of Minnesota and a consultant in medicine at the Veterans Hospital.

* * *

A former resident of Ivanhoe, Dr. Arthur R. Andrejek became associated with the Madison Clinic on October 1. After graduating from the University of Minnesota in 1946, Dr. Andrejek served a sixteen-month internship at Henry Ford Hospital, Detroit, Michigan, then took postgraduate work in obstetrics and gynecology for four months before moving to Madison. In addition to Dr. Andrejek, the staff of the Madison Clinic now includes Dr. Walter N. Lee, Dr. Magnus Westby and Dr. Nels Westby.

* * *

As the fifth son of Dr. W. F. C. Heise to enter medical practice with his father in Winona, Dr. Phillip R. Heise joined the staff of the Heise Clinic on November 3. The unique medical family became complete on that date, with father and five sons in practice together.

Dr. Phillip Heise was graduated from the University of Arkansas, served his internship at Baptist Memorial Hospital in Memphis, Tennessee, spent three years in the army medical corps, then took postgraduate work in obstetrics and gynecology at St. Barnabas Hospital, Minneapolis, and John Gaston Hospital, Memphis, before returning to Winona to join his brothers and father at the Heise Clinic.

* * *

The U. S. Army and Air Force require 30,000 recruits monthly to maintain personnel to man occupation areas, to train for national defense, and to conduct research and development programs.

The Army and Air Force offer unusual opportunities for interesting careers or for training for future civilian jobs. Enlisted men are entitled to compete for officer's training schools; all personnel may advance their education by enrolling in any of the hundreds of courses offered by the U. S. Armed Forces Institute; pay is high; thirty days of vacation are allowed.

Further information may be obtained from the Military Personnel Procurement Service, Room 5D675, Pentagon Building, Washington 25, D. C.

* * *

Valuable clinical and research data often remain unpublished because a physician does not have time or facilities for checking and editing a manuscript. Submission of manuscripts can thus be delayed and an author's productivity limited. Available now to ease the burden of the physician-writer are the services of an organization called Manuscript Service, Inc.

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The Ward Burdick medal of the American Society of Clinical Pathologists was awarded to Dr. Charles Sheard, Rochester, at a meeting of the society in Chicago, October 28. The citation was made to Dr. Sheard, who is director of the division of biophysical research at the Mayo Clinic and professor of biophysics in the Mayo Foundation, in recognition of his contributions to the theoretical, experimental and instrumentational developments in the field of spectroscopy, photelometry and spectrophotometry.

At a November meeting in Chicago, the American Academy of Ophthalmology and Otolaryngology elected Dr. Sheard to honorary fellowship in recognition of his contributions to theoretical and applied physiological optics.

* * *

November 7 was the one hundredth anniversary of the acceptance of Elizabeth Blackwell as the first woman medical student in the United States.

Eleven medical schools had refused admission to Elizabeth Blackwell in 1847 when the Geneva, New York, Medical School finally accepted her, more or less as an experiment, after a vote of the student body. She was graduated with high honors, the first woman physician in the country.

At present there are approximately 8,000 women physicians in the United States, with 518 licensed in Minnesota as of June 1, 1947. Of sixty-nine approved medical schools, the AMA reported in 1946, only three refuse to accept women as students. At the University of Minnesota Medical School, each class of 100 now has an average of ten women students.

* * *

During October and November, twelve rural school health clinics were held in Goodhue County to give rural school children the same health benefits that are available in town and city schools.

Physicians of Goodhue County traveled to twelve rural schools to inoculate children for smallpox and diphtheria and to administer Mantoux tests.

This year's series of clinics was the third held since 1942 when Goodhue County established the first rural school health clinic of its kind in the country. Cost of the clinics was about fifty cents per child, and county officials estimated that more than 1,500 children took advantage of the voluntary checkup this year.

The clinics are sponsored jointly by the county agent's office, the county Farm Bureau Federation, the county rural schools, and the local physicians.

* * *

Rural counties in Minnesota have only one-fourth as many physicians for every 1,000 persons as the state's more urban counties, it was pointed out recently in a study published by the Minnesota Agricultural Experiment Station.

The survey indicates, however, that urban centers provide medical service for rural people, so the ratio is not as disturbing as it might seem.

Distribution of physicians in Minnesota counties varies from one for every sixty-three persons in Olmsted County, home of the Mayo Clinic, to one physician for every 4,129 persons in Cass County. Hennepin County (Minneapolis) has 480 persons per physician; Pine County has 3,068.

In addition, counties having less than five physicians to serve their entire area are Cook, Lake of the Woods, Hubbard, Clearwater, Kanabec, Traverse, Red Lake, Kittson and Mahnomen.

* * *

With the addition of a general practitioner to its medical faculty, the University of Minnesota Medical School is attempting to strike a better balance between the two approaches to medical work, specialization and general practice.

In line with a growing interest in general practice displayed by both undergraduate and graduate students, the Medical School has secured the services of Dr. Thomas E. Eyres, a general practitioner at Pequot Lakes for nine years, to put a greater emphasis on medical training for that type of work.

For the next year Dr. Eyres will conduct a three-point program: (1) give advice to medical students who plan to enter general practice, (2) assist in arranging continuation study courses for general practitioners, and (3) compile reports on characteristics of teaching in relation to needs of the general practitioner. In addition, during winter and spring quarters, Dr. Eyres plans to teach an elective course on general practice to senior medical students.

* * *

Public health administration in Minneapolis was attacked by Dr. Gaylord W. Anderson, director of the University of Minnesota School of Public Health, in a speech made at a Health Action Committee executive board meeting in Minneapolis, October 22.

Dr. Anderson stated that failure to adopt modern methods of public health administration is costing the people of Minneapolis a heavy price in sickness and money. He accused the city of (1) unwillingness to unify health administration on a joint city-county basis, (2) too much dependence on charitable voluntary agencies for doing essential anti-disease jobs, (3) keeping public health work under the board of public welfare, primarily a relief-administering agency, and (4) failing to change public health emphasis from infectious diseases to today's major problems, such as cancer, heart disease, mental illness.

Urging the city to drop its horse-and-buggy-age methods, Dr. Anderson advocated the setting up of a separate public health department with a chief health officer and semi-legislative responsibilities.

* * *

At ninety years of age, Dr. George D. Haggard is still practicing medicine at his home in Minneapolis.

Born in a cabin north of Rochester in 1857 when Minnesota was still a territory, Dr. Haggard is probably the oldest practicing physician in the state. Thirty-three years of age before he decided to become a physician, Dr. Haggard was graduated from the University of Minnesota in 1893, the oldest man in his class. Shortly after he began practice, he was appointed assistant city health officer in Minneapolis and served in that capacity for four years. He then taught physiology and

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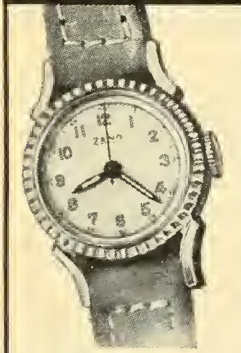

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chemistry in the medical school for six years. During the early 1900's, while working for the state health department, he battled typhoid, smallpox and poliomyelitis epidemics both in Minneapolis and in northern Minnesota. Shortly before World War I, he was Prohibition Party candidate for governor, gathering 32,000 votes in the election.

Although Dr. Haggard stopped going out of his home more than a year ago, he still sees patients who come to him. Some of them are from families in which four generations have been treated by the aged physician.

* * *

Three Mankato physicians met November 1 with city officials of North Mankato and Parents and Teachers Association representatives to oppose the city's plan to have a second county nurse hired.

Dr. H. J. Nilson, spokesman of the medical group which consisted of Dr. Hobart Johnson and Dr. A. A. Giroux, North Mankato, stated at the meeting that Minnesota hospitals need 2,500 nurses and that an attempt to hire a second county nurse would only aggravate the situation. On that basis Dr. Nilson said he opposed the plan "practically but not in principle."

PTA representatives had stated that there was an urgent need for an additional nurse since the Nicollet County nurse could spend only one day per week in North Mankato's public school. After the local superintendent of schools pointed out that there was not enough work for a full-time school nurse, the city council suggested that the county commissioners could be asked to hire a second county nurse who could be based in North Mankato, serving also as city and school nurse. The protest of the local physicians then arose.

* * *

Formation of a cancer control advisory committee was announced on October 30 by Dr. A. J. Chesley, secretary and executive officer of the Minnesota Department of Health. The committee will aid the Division of Cancer Control of the state health department in planning and carrying out a program of cancer control.

Named as members of the advisory group, with organizations they represent, were:

Dr. A. H. Wells, Duluth, Minnesota State Medical Association; Dr. Clayton Swanson, Minneapolis, Minnesota Dental Association; Dr. D. W. Pollard, Minneapolis, Minnesota Hospital Association; Dr. William A. O'Brien,* Saint Paul, Minnesota Division, American Cancer Society; Dr. Owen H. Wangensteen, Minneapolis, University of Minnesota Medical School; Dr. Kano Ikeda, Saint Paul, Minnesota Society of Clinical Pathologists.

Named as members-at-large were: Dr. E. T. Bell, Minneapolis; Dr. James Johnson, Minneapolis; Dr. William W. Will, Bertha; Dr. D. P. Anderson, Jr., Austin; Dr. W. C. Popp, Rochester; Dr. Joseph Bierkson, Rochester, and Sister Patricia, St. Mary's Hospital, Duluth.

* * *

Fifty members of the Bloomington (Minneapolis suburb) 4H Club have launched a project, which may become a nationwide campaign, to raise funds for the battle against heart disease in children.

---

*Deceased.

Under the Bloomington plan, club members will "sponsor" a young calf, taking care of it for a year on a co-operative basis. When the calf has reached top market stage, it will be sold and the proceeds will go into a special fund to cover the cost of treatment for any member who may develop rheumatic fever or any other heart disease. Some of the money may be used for related educational efforts.

The project, which is sponsored by the Minnesota Heart Association, will vary in type as it is taken up by other 4H clubs throughout the state. Some clubs may devote acreage to a special crop of grain for the heart disease campaign instead of raising livestock. Several farmers have already indicated a desire to contribute starting stock to the project. State 4H executives and Minnesota Heart Association officers are convinced that the idea will be taken up on a national scale in a comparatively short time.

* * *

The part played by physicians in the synthesis of science was described by Dr. Richard E. Scammon at the first fall meeting of the Medical History Society in Rochester, October 17.

Principal speaker at the meeting of the society, which was organized one year ago by a group of men interested in medical history, Dr. Scammon is former dean of medical sciences of the University of Chicago and is distinguished service professor emeritus of anatomy at the University of Minnesota. He was introduced to the group by Dr. H. A. Wilmer, Rochester, who commented on Dr. Scammon's versatility as an anatomist, artist, biometrician and scientific historian, adding that many former medical students remember Dr. Scammon for his ability to draw with both hands at the same time while lecturing on anatomy.

In his talk Dr. Scammon described the bringing together of scientific knowledge and scientific workers, a synthesis of science that first took place during the century following the middle 1600's. He traced the formation of scientific societies throughout Europe and the United States, emphasizing the work of numerous physicians in starting and maintaining the trend towards organization. He indicated the possibility of another great synthesis of science in this century and expressed the hope that medical men would be as useful in it as they had in the past.

* * *

Minnesota leads the nation in the hospitalization of tuberculosis patients, it was stated at the annual Christmas Seal dinner of the Minnesota Public Health Association, held October 31 at Hotel Nicollet in Minneapolis.

Authority for the statement was Dr. Herbert L. Mantz, president-elect of the National Tuberculosis Association, who stated that 84 per cent of the deaths from tuberculosis in Minnesota were hospital cases. "This figure reflects the effectiveness of precautionary care undertaken by the state," he said. In comparison Dr. Mantz pointed out that in his home state of Kansas 65 per cent of tuberculosis deaths occur in homes.

Quoting from a 1945 survey by the New York City Tuberculosis and Health Association, Dr. Mantz said that Minneapolis has the lowest tuberculosis death rate among the larger cities of the country.

Other speakers on the dinner program were Dr. Hilbert Mark, Minnesota director of the division of tuberculosis control, and Dr. H. A. Wilmer, author of *Huber the Tuber* and fellow in the Mayo Foundation. Earlier in the day, Christmas Seal workers heard, among other speakers, Dr. James E. Perkins, a former Saint Paul resident, now managing director of the National Tuberculosis Association.

With the election of officers at the meeting, Mrs. John

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A. Thabes, Sr., Brainerd, became the first woman president of the organization in its forty-one-year history. Also named to office were N. Vere Sanders, Albert Lea, first vice president; Albert A. Anderson, Buffalo, second vice president; Mrs. Clarke Dodds, Baudette, secretary, and John B. Burke, Saint Paul, treasurer.

* * *

Seventy-five years of public health work were celebrated November 14 when the Minnesota Department of Health observed its diamond jubilee with an all-day session at the Hotel Radisson in Minneapolis.

The celebration was marked by the first annual meeting of the Minnesota Public Health Conference, an organization which supersedes the former state sanitary commission.

During the day, conferences were held for physicians and health officers, public health nurses, environmental sanitation personnel, and health education and school health workers. Among the speakers at the group meetings were Dr. A. J. Chesley, secretary and executive officer of the Minnesota Department of Health, Dr. Dean F. Smiley, consultant in health and physical fitness for the AMA, and Dr. E. L. Tuohy, chief of laboratories at St. Mary's Hospital, Duluth.

At the evening banquet which honored the state organization, Dr. T. B. Magath, Rochester, served as toastmaster, introducing Governor Luther W. Youngdahl and other prominent guests who congratulated Dr. Chesley, state health officer since 1921, on the outstanding achievements of the Minnesota Department of Health. Dr. Floyd M. Feldman, Rochester, president of the Minnesota Public Health Conference, delivered his presidential address at the banquet.

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New officers of the Minnesota Public Health Conference, elected at a meeting earlier in the day, are Dr. J. Lawrence McLeod, Grand Rapids, president; Melvina Palmer, Minneapolis, first vice president; S. P. Kingston, Rochester, second vice president, and Dr. Charles E. Sheppard, Hutchinson, treasurer.

* * *

Outdoor living, wild-life conservation, and experimental farming compete with medicine for the attention and time of Dr. M. M. Hargraves, staff member of the Mayo Clinic and state president of the Izaak Walton League.

To Dr. Hargraves conservation means more than maintaining a supply of fish and game; it means the preservation of human values and all natural resources, particularly the soil. With that belief he and four partners recently purchased a farm north of Rochester, a farm with hills, an erosion problem, a spring, a view and possibilities for improvement. There Dr. Hargraves and his associates are putting into practice all principles of conservation, with development of contour fields, elimination of old gullies, and planting of permanent grass. They have a small herd of Holsteins and a herd of Angus beef cattle, all registered animals. A fish pond, to be stocked with bass, bluegill and trout, is planned as soon as a dam can be built below the spring.

Dr. Hargraves, who has been at the Mayo Clinic since 1935, finds little time for rest with his double duties as physician and as state president of the Izaak Walton League. A fairly typical twenty-four hour schedule for him includes a full day at the clinic, a late afternoon or dinner talk to some conservation group in Olmsted County, an evening meeting in the Twin Cities, and a morning look at the farm before starting another session at the clinic. Every other Friday evening he conducts a radio program on fundamental conservation over a Rochester station.

Not content with this, Dr. Hargraves looks forward to the founding of a permanent state educational foundation for conservation, with motion pictures, a speakers bureau, and an annual short course of two or three days at some lake, to inform and educate the public as to the importance of generalized conservation.

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HOSPITAL NEWS

More than $1,000,000 will be spent to enlarge Minnesota's oldest and largest mental institution, the St. Peter State Hospital, where construction work on the new expansion project has already started.

Two new buildings, to house 150 senile patients each, will be constructed on the bluffs in the rear of the old receiving ward, while a new service building will house a kitchen, storage rooms and other shops. It is anticipated that when the new buildings are completed, fifty additional attendants and possibly six more physicians will be added to staff the increased facilities.

Construction of a new cattle barn for the institution, to replace the one destroyed by fire a year ago, has already begun, and the work is expected to be completed in January.

* * *

Announcement was made early in November by Dr. W. C. Heiam, Cook, that the modernization and remodeling of the Cook General Hospital had been completed.

The building has been completely rewired, and new plumbing and heating facilities have been installed. An addition has been built onto the structure to house more hospital beds and provide better operational facilities. Floors have been covered with asphalt tile, and the entire building has been repainted. New therapeutic and nursing equipment has been installed. Cost of the remodeling was more than $10,000.

* * *

The problem of coping with increasing operational costs of a hospital was studied at a one-day institute November 13 at Northwestern Hospital, Minneapolis.

Speakers at the meeting included James Hamilton, professor of hospital administration at the University of Minnesota, and Dr. Arthur C. Bachmeyer, director of the University of Chicago Hospital and Clinics.

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WANTED—Associate, Catholic preferred, for general practice in Saint Paul. This is an interesting and lucrative situation with possibility of taking over practice. Address E-49, care Minnesota Medicine.

FOR SALE—Office equipment used less than one year. Includes examining table, two instrument cabinets, Castle sterilizer, microscope, Rose short-wave machine, ultra-violet lamp, stool, desk and chair, office supplies and instruments. Located thirty-five miles from Minneapolis. If interested, write Box 1587, San Haven, North Dakota.

EXPERIENCED LABORATORY TECHNICIAN desires position in doctor's office, Saint Paul. No x-ray. Address E-50, care MINNESOTA MEDICINE.

IDEAL LOCATION FOR PHYSICIAN—With two dentists, on Selby-Lake carline in Midway Saint Paul. Address Dr. M. L. Norman, 1812 Selby Avenue, Saint Paul 4, Minnesota.

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WANTED—Assistant for General Practice with view to permanent association. Southern Minnesota, county seat city, population 4,500. Active general practice with some major surgery. New hospital to be erected in near future. If interested, write, giving full particulars concerning self. Address E-47, care Minnesota Medicine.

FOR SALE—Unopposed, well-established, southern Minnesota practice. Population 500. Large territory, good roads and school. Retiring. Address E-48, care Minnesota Medicine.

POSITION WANTED—Laboratory technician, undergraduate nurse, desires position with Minneapolis (loop) physician. Urologist preferred. Five years' experience. Telephone Mrs. Polly Akins—LIncoln 4927 (Minneapolis).

WANTED—Surgical assistantship, preferably in or near Twin Cities, by young doctor expecting army separation in February, 1948. Eighteen months' general surgery resident training. Desire position under Diplomate, American Board of Surgery, if possible. Write E-52, care Minnesota Medicine, for details.

WANTED TO BUY—Office equipment. Must be in excellent condition. Address E-53, care Minnesota Medicine.

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